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ABSTRACT

The principal objective of this part of the multimethod Head Start bilingual/bicultural curriculum evaluation (Juarez and Associates, 1980) was to determine the effectiveness of four early childhood bilingual/bicultural curriculum models developed for Spanish-speaking children. The eight programs assessed had implemented the Alerta, Amanecer, Nuevas Fronteras or the Un Marco Abierto models. Each model was assessed at two sites. Evaluation of Head Start and control group children on selected measures of social competence with model program experience as the independent variable in a pre- and a posttest format was attempted. Areas of social competence tested as dependent variables included the four following domains: Spanish and English language comprehension and production, and concept development and socioemotional behavior. Additionally, a parent interview was designed to gather information on background characteristics of experimental and control group children and their families. Interviewers also sought information related to parents' general attitudes and knowledge, and their educational aspirations for their children. A questionnaire was developed to record teachers' perceptions of Head Start children and parents and, as well, the special characteristics of Spanish-dominant and bilingual Head Start children. In five chapters, the report provides (1) a review of the instruments and data collection procedures, (2) a presentation of the analysis plan, (3) the results of the pretest (forming the bulk of the report), and (4) an examination of alternatives for posttest analysis. (Author/RH)

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An Evaluation of the Head Start Bilingual Bicultural Curriculum Development Project

Report of Pretest Results and Posttest Analysis Plan for the Quantitative Component

Authors: Roger Bolus, Ray A. Chesterfield, Kathy Hayes,
Thomas LaBelle, Ray S. Pérez, Myrna Valle,
Thomas Weisner, Marlene Zepeda

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Project Directors: Ray A. Chesterfield, Ph.D.
Ray S. Pérez, Ph.D.

Prepared for: Dr. Steve Martinez, Project
Administration for Children, Youth,
and Families
Office of Human Development Services
Department of Health, Education, and
Welfare

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1100 Glendon Avenue • Los Angeles, California 90024 • (213) 478-0826 • (213) 879-5899

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CHAPTER I

INTRODUCTION

This pretest report fulfills the requirements of Task 14 of HEW Contract #105-77-1048, modification No. 05. The primary aim of this document is to summarize the results obtained from the psychometric testing of children and from the interviews conducted with their parents and teachers at the eight sites where the Head Start bilingual bicultural curriculum models are currently being implemented. The strategies outlined in this report reflect a concern with the many theoretical issues and practical problems associated with the use of tests and other instruments for the assessment of pupil growth among preschoolers. Also discussed are the considerations which have guided our collection of data from parents and teachers.

The testing of young children is always a delicate endeavor. One reason is that measures which are well established for older age groups are frequently inappropriate for use with preschool groups. It is generally the case that preschoolers are inexperienced with the schoollike tasks that make up the tests and, therefore, have had little or no practice with the skills necessary to adequately perform in test situations. In fact, even if young children have had experience in the use of skills similar to those sampled by a test, these skills may not transfer to the novel context of the test situation. Consequently, as observed by Shapiro (1973) in her evaluation of a Follow Through Program, a disparity often results between classroom responses and test responses. In such cases, judgments of program effectiveness are at best tenuous.

The content of a test may also be unfamiliar or uninteresting to young children and, with Latino children, may be alien to their background and experiences (Padilla & Garza, 1975). The way young children, or for that matter adults, respond to problems depends in large measure on their familiarity with the content of the problem, and this familiarity may vary in unknown ways with a person's home culture (Cole, 1975). Simmons (1979), for example, managed to significantly modify the test scores of young black children by carefully adjusting the cultural salience of the test content. The present evaluation includes Hispanic and non-Hispanic children who represent a variety of ethnic groups. Such heterogeneity demands that test selection include an examination of the relevance and appropriateness of each item in the battery.

A third and related issue is that the social situation and the tester-child interactions embodied in standardized testing may strongly influence performance (Labov, 1968; Mehan, 1978; Moll, 1978). This means that in addition to the characteristics of the instruments, the testing environment or the physical setting where tests are administered and the status and skills of the testers must be taken into account in the selection and use of tests to assess children. This point is particularly relevant to the evaluation given the different geographical locations of the sites, the diversity of Head Start settings being used, and the anticipated variability in the tester's previous experience and skills.

The problems of testing young children are exacerbated when the children's first language is not English. In addition to the three factors already discussed, evaluators must contend with the scarcity of adequate tests in Spanish for preschoolers (Cordova, 1977, Padilla et al., 1975), inadequate translations of available instruments (Padilla & Garza, 1975), determining what language to use in administration of the test (Bernal, 1977; Hardy, 1977), and the possible cultural and linguistic bias of the tests (Olmedo, 1978).

In light of these and other evaluation issues, Juarez and Associates took extensive care in the selection of tests to be used as indexes of pupil growth and in the procedures used to administer these tests and developed checks on the accurate interpretation of results (Juarez and Associates, June 1979). A battery of tests has been selected not only on the basis of its appropriateness for young children in a bilingual setting but also for the overlapping nature of the individual tests. The approach of avoiding use of a single task or test to measure variables and relying on a series of perspectives to look at chosen behaviors in differing contexts and situations is further enhanced by interview data. Such data provide background information and indications of ongoing changes in the home or school environment which may influence performance in the program.*

The rest of the report is organized as follows: (1) a review of the instruments and data collection procedures, (2) presentation of the analysis plan, (3) the results of the pretest (forming the bulk of the report), and (4) an explanation of alternatives for posttest analysis.

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*Our multimethod approach also contains an extensive ethnographical component involving ongoing school, classroom, and community observations. For detailed discussions of this component, see Juarez and Associates, September 1979, and Juarez and Associates, December 1979.

CHAPTER TWO

DATA COLLECTION

The principal objective of the evaluation is to determine the effectiveness of four early childhood bilingual bicultural curriculum models developed for Spanish-speaking children. Specifically, the project is to provide information on the feasibility of successfully implementing the curriculum models in different settings and on the change in children, parents, and teachers as a result of their participation in one of the four models. The evaluation contract required that Juarez and Associates assess the performance of Head Start and control children on selected measures of social competence using psychometric tests in a pre- and posttest format. The areas of social competence include the following domains: Spanish language comprehension, Spanish language production, English language comprehension, English language production, concept development, and socioemotional behavior.

A parent interview was designed to gather information on background characteristics of experimental and control group children and their families. The interview schedule also elicits parental attitudes, knowledge, and aspirations with regard to education in general and bilingual education in particular. A questionnaire allowed teachers to record their perceptions of Head Start children and their parents and of the special characteristics of Spanish-dominant and bilingual Head Start children.

A. Instrumentation for Children

The selection of the test battery for children was guided by the principle of finding the best fit between program objectives and activities, and tests. The procedure involved examination of tests in terms of technical adequacy (reliability coefficients are included for each test), appropriateness of content for the target population, feasibility of administration, and congruence of tests to curricular objectives (for details, see Juarez and Associates, July 1978). The instruments selected for the test battery are identified in Figure 1 and described below.

1. Language Check

The El Circo Language Check is a 16-item test designed by the Educational Testing Service. It is used as a screen to ensure that a child has sufficient command of his or her identified preferred spoken language to understand the instructions for the various tests of the assessment battery. The first administration of the Language Check is in the child's identified preferred language. If the child does not answer 10 items correctly, the Language Check is administered in the second language. The Spanish version was translated from English by Juarez and Associates' staff. If the child fails to attain this criterion in either language, she or he is not tested further. The results of the pilot test indicated that the Language Check in both Spanish (r=.53) and English (r=.44) be retained without modification.

2. Escuchen Este Cuento and Listen to the Story (Language Comprehension)

Escuchen Este Cuento and Listen to the Story were designed by the Educational Testing Service to measure a child's ability to listen to, remember, and comprehend a story. In addition, Escuchen Este Cuento and Listen to the Story were selected for this evaluation because they test several dimensions of concept development. The results of the pilot study indicated that the Escuchen Este Cuento (r=.79) and Listen to the Story (r=.73) tests should be modified by eliminating the test items which required inference and interpretation, thereby reducing each test to 15 items and providing a closer relationship between the tests and the curriculum objectives. No difficulties in scoring or coding were encountered with these tests.

Figure 1

Test Measures and Testing Sequence

Testing Domains	Session	Spanish Dominant		English Dominant		Estimated Time of Administration	Estimated Time of Scoring
		1st Language	2nd Language	1st Language	2nd Language		
Language Preference	1st Session	Language Check		Language Check		5 to 10 Minutes	10 to 15 Minutes
First Language Production		Dímelo Tú Parts IIa, IIIa, b, c		You Say It Parts IIa, IIIa, b, c		10 Minutes	20 to 30 Minutes
Second Language Comprehension	2nd Session		Listen to the Story (Modified, version of 15 items)		Escuchen Este Cuento (Modified Ver- of 15 items)	10 to 15 Minutes	5 to 10 Minutes
First Language Concept Development		PSI Spanish		PSI English		15 Minutes	10 to 15 Minutes
Second Language Production	3rd Session		BSM-E		BSM-S	5 to 10 Minutes	20 to 25 Minutes
First Language Comprehension		Escuchen Este Cuento (Modified version of 15 items)		Listen to the Story (Modified version of 15 items)		10 to 15 Minutes	5 to 10 Minutes
Second Language Concept Development	4th Session		PSI English		PSI Spanish	15 Minutes	10 to 15 Minutes
First Language Production		BSM-S		BSM-E		5 to 10 Minutes	20 to 25 Minutes
	5th Session Pick-up Session						
TOTAL TIME -						75 to 100 Minutes	100 to 145 Minutes

3. Dimelo Tu and You Say It (Language Production)

Dimelo Tu and You Say It are part of the Circo/Circus test battery developed by the Educational Testing Service. The purpose of these tests is to assess children's oral language abilities in Spanish or English. Although Dimelo Tu and You Say It resemble each other in design and format, they are not direct translations of each other. Each test uses different materials and pictures as the basis for questions. Results of the pilot test showed the Functional Language section of both tests to be very difficult for young children. On the average, pilot children answered less than half of the items correctly and the item discrimination index of many of the items was inadequate ($r_{bis} < .20$). Graphics were poor, administration was difficult, and scoring was time consuming for the entire subtest. This subtest, together with Part IIb, which duplicated many of the skills needed in Description Part IIa and had a low internal consistency, were eliminated from both tests. Therefore, only Parts IIa and III of the test were used.

Part IIa asks the child to describe a pencil (English version, r=.27) or a button (Spanish version, r=.31). The examiner writes verbatim what the child says. In Part III the child is asked to make up a story about a classroom scene (English version, r=.77) or a yard scene (Spanish version, r=.73). The examiner then writes what the child says for a three-minute period. Follow-up questions are asked so that additional information about the child's language development can be obtained (English version, r=.59 and Spanish version, r=.66). All of the child's narrations and follow-up responses are tape recorded for later scoring. The test takes approximately 10 minutes to administer.

Scoring of Dimelo Tu and You Say It varies for each section of the test. Part IIa has a maximum of seven possible points if a child responds correctly to each item. In Part III the number of different words used in the child's three-minute description is recorded.

4. Bilingual Syntax Measure (Language Acquisition)

The Bilingual Syntax Measure, developed by Harcourt Brace Jovanovich, Inc., is a quick and efficient means of assessing the English and Spanish oral proficiency of children and determining their English or Spanish language dominance. The BSM* is used in this evaluation primarily as a means of eliciting a speech sample of young children from which to assess their syntactical development in the first and second language. Both the Spanish and English versions of the BSM require an individual administration time of 10 to 15 minutes. The administration follows a conversational pattern with the tester asking a series of 25 questions about a set of cartoon-type pictures. Responses are written verbatim by the examiner as well as taped for later verification.

Although the BSM was developed to measure English second language acquisition and Spanish first language maintenance among young children, it has been used widely among other age and language groups. Even when the instrument has been administered to the age group with which it was developed (children 5 to 8 years old), it has been criticized for not supplying a sufficient number of obligatory contexts to meet the usual criteria of morpheme acquisition (90 percent accuracy rate on at least 10 occurrences). With younger children, as pointed out in the report on the piloting of this instrument (Juarez and Associates, June 1979), the criteria for scoring the measure eliminated a majority of the 4-year-olds tested even though they had had approximately five months of preschool experience at the time of administration. In addition, although the authors warn that small differences in the Syntax Acquisition Index (SAI) are not meaningful for the 4-year-old pilot sample tested, the broad range levels of the SAI tended to mask differences between children. Hence, for this evaluation, in order to take maximum advantage of the systematically elicited grammatical structures provided for each child in first and possibly second language, responses to the BSM were scored in terms of mean length of utterance (MLU). The MLU has been shown to be effective in discriminating language acquisition levels among young children across different languages (Brown, 1973) by providing a relatively simple and consistent index of grammatical knowledge.

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*Owing to the nature of the BSM, reliability coefficients for either the Spanish or English versions are not reported.

In general, the criteria established by Brown were used to calculate the MLUs for the experimental and control children in each language group at each of the sites. As the interest was in producing an index which could be used to measure growth in both first and second language, however, only responses given in the language of the test were counted and a minimum of three responses (also the criterion for continuing testing) were required for scoring.* Less than three responses was considered as an MLU of zero. The other criteria** are listed in Appendix A.

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* Brown (1973) states tha[illegible] constructions become more complex, thereby increasing in length, the MLU may depend more on the situation in which the utterance occurs than on what the child knows, and Keith Kernan (personal communication) has suggested that such a process occurs with MLUs above 4.0. In the present case, however, as both the structure and subject matter of the interaction are controlled, this would not seem to be a problem.

** It has been suggested that article-noun and pronoun-noun agreement for both number and gender should count as additional morphemes. The error rate with Spanish-speaking children in this age group, however, seems to be very low (less than 10 percent in both Garcia's (1980) study and in a random sample of our own BSM data). Thus, for the sake of consistency across measures, this criterion was not used.

5. Preschool Inventory (Form B, English and Spanish Versions: Concept Development and Perceptual Motor Skill)

The original Preschool Inventory developed in English (r=.84) and Spanish (r=.79) by the Stanford Research Institute included 64 items (revised edition, Form B). The version of the instrument used in this evaluation includes only 30 items. This test has been successfully employed in other large-scale early childhood education evaluations; it reflects the Head Start preschool program curricula; it is engaging for children; and it is easily administered and scored.

Results of the factor analysis performed on the pilot study data and subsequently verified in the pretest data analysis identified two factors which accounted for 73 percent of the total variance among all items. For the present analysis these two factors have been treated as subtests measuring concept development and perceptual motor skills, respectively. Thus, 26 of the items assess language development and general cognitive skills, while the other four items assess perceptual motor skills. Together, the instrument's 30 items provide an assessment of the child's ability to speak, comprehend, follow directions, copy designs, name parts of the body, label objects, and provide evidence of a knowledge of number concepts and ordination. Administration of this test takes approximately 15 minutes.

6. Socioemotional Development

In order to obtain an indication of socioemotional development, the test examiner rated each child following the third and fourth testing sessions as to the behavior of the child during those sessions. Children were judged in accord with a five-point Likert scale from "always" to "never" on the following five dimensions of their behavior: persistence, cooperation, patience, enthusiasm, and the need for verbal reinforcement to maintain interest on task.

The high level of internal consistency (r=.86) found for the pilot test data indicates that all items in the scale were measuring a similar construct. Hence, a composite score, theoretically ranging from a high of 25 to a low of zero, was formed to represent socioemotional level during testing.

Administration of Child Instrument. In preparation for administering the entire test battery, job announcements for the recruitment of test supervisors and testers were circulated in June. As testing dates varied, resumes of potential candidates were collected through October. All of the test supervisors employed were holders of at least a B.A. degree, with prior experience in test administration with bilingual children, fluency in Spanish and English, and had academic backgrounds in child development and bilingual education. Test supervisors were trained on August 17 and 18, 1979, at Juarez and Associates' offices. Training included an introduction to Head Start programs by site; the recruitment, screening, hiring, and training of local testers; an introduction to the test materials and practice in the administration of the test battery; role playing of special test problems; and the training of others in the administration of the tests.

The recruitment of local testers at each of the eight sites proceeded through the placement of announcements in university placement offices, employment agencies, newspapers, and other likely sources of qualified candidates. Resumes were submitted and interviews were conducted at each site by test supervisors. Candidates were screened for language ability in Spanish and English, prior experience with children and in the administration of tests, level of formal education, and availability for the duration of the test battery administration. Three or four local testers were hired at each of the eight sites and were trained for a minimum of 24 hours by the test supervisors in separate three- to four-day sessions. Local tester training included an explanation of the evaluation, the role of the tester, the role and function of Head Start, the administration and scoring of each test in the battery, the preparation of test forms and the coding of test results where applicable, and supervised practice in the administration of each test. The training and administration of the test battery followed guidelines contained in a specially prepared examiner's manual (see Appendix B).

The testing was initiated during the month of September at most sites and as late as November at one site. Similarly, testing was completed in September or October at most sites but lasted until early December at one site Specifically, at the Laredo and Rio Grande sites testing occurred between September 10 and September 28; at Corpus Christi, September 17 and October 4; at East Los Angeles, September 18 and October 26; at the two New York sites, September 19 and October 29; at Corona, October 1 and November 4; and at Milwaukee, November 5 and December 7. Supervisors generally remained on site during the time of testing to oversee the testing of both experimental and control group children. During that time, systematic observations were undertaken by the supervisors, enabling monitoring of the administration of the tests, the relationships of the testers with the children, and the use of time and materials in gathering necessary data. This supervision procedure provided feedback to the testers so that they could remain consistent in their performance, identify problems in the administration of the tests, permit collective action to be taken, and ensure uniform quality and completeness of the data collected.

Upon completion of the testing at each site, test packages were returned to Juarez and Associates for coding, scoring, and data analysis. Scorers and coders were recruited, screened, hired, and trained in Los Angeles. All of the scorers and coders hired were bilingual and biliterate college graduates in education or related fields who were trained and supervised by the coder supervisor and the data manager. Their training included familiarization with the evaluation project, coding requirements for each test, and practice sessions on scoring and coding of each instrument. Coding, scoring, and keypunching of the data from the test battery were completed by December 1, with the exception of the data from Milwaukee. The processing of the Milwaukee data was finished on December 21, 1979.

Limitations to Child Instrument

A conceptual issue of critical importance in this evaluation is the measurement of initial language ability of children in not one but two languages, in order to establish a baseline for the child's language development in Spanish and English. Three problems make the identification of children's language ability in English and Spanish in this study a difficult task. The first problem is the accurate identification of bilingualism in children. The children in this study are from lower income families and range in age from 3.8 to 4.8 years of age. Unfortunately, a paucity of data exists on the acquisition of two languages by young children from predominantly lower income backgrounds. The data that do exist come from longitudinal studies by linguists who have investigated their own children's progress in acquiring two languages. As might be expected, the samples of children in these linguistic studies are generally small and the children are typically from middle to upper class families. Thus, normative data do not exist for acquisition of language for children similar to those in the present study.

A second problem involves instrumentation. Presently, no tests exist that are designed to assess the acquisition of two languages in evaluation studies of this size (the number of children in this study is 518).

A third and crucial problem is that no consensus exists among researchers in the area of language acquisition as to what constitutes language competence in English and Spanish for children like those involved in this study.

Padilla (1977), in an attempt to provide a definition of bilingualism, states, "In its simplest sense, bilingualism refers to the ability to communicate in two languages." Although this definition may make sense when one speaks of an adult's ability to communicate with others, it does not go far enough in specifying the skills involved in assessing language acquisition of young children. What is needed is a definition that provides a finer analysis of the components of language. MacNamara (1967) has included coding and encoding skills in his definition of bilingualism. MacNamara has suggested that in order for children to encode and decode a linguistic message she or he must have mastered the basic sound and alphabetic systems of each language (phonemes and graphemes), vocabulary of the language (lexicon), grammatical rules of the language (syntax), and the significance of words (semantics). To adequately assess bilingual ability, therefore, this evaluation contractor would be required to make assessments of childrens' abilities in these four skill areas, a task clearly beyond the scope of the present evaluation. Hence, Juarez and Associates decided to assess the child's ability in each language separately. The assumption is made that the child is more competent in one language, i.e., the child's preferred language, and that the child is exposed in varying degrees to a second language, i.e., his non-preferred language.

For the purposes of this evaluation, children's preferred language was defined as the language the child prefers to use with his or her parents, teachers, sibs, and peers. Therefore, prior to testing, each child's language preference was assessed by two methods. First, the parents' judgment of the child's language preference was determined by having the parent rate the child's language usage with several different individuals including parents, teachers (other adults for controls), siblings, and peers. Second, the use of the El Circo/Circus language screen mentioned previously was administered in the parent-identified child-preferred language. If the child failed to achieve the criteria on either the English or Spanish versions of the Language Check, all testing was terminated.

The analysis recognizes that children have differing experiences and they are assumed to be at different levels in the process of acquiring a first and second language. Thus, different results would be expected from the same treatment depending on the baselines of language development. However, the four curriculum models under evaluation have as common objectives the development of language production and comprehension in two languages. Therefore, growth in these areas in both languages is to be measured through the instruments previously described.

B. Parent Interview

The parent instrument is an individually administered interview schedule developed in Spanish and English versions by Juarez and Associates as an index of parental attitudes toward education in general and bilingual bicultural education in particular and of parental aspirations for children's educational and vocational attainment. The parent interview also collects data on the background characteristics of participating families.

The instrument is designed as a pre- and posttest measure consisting of 49 open- and closed-ended items (see Appendix D). Also included is an observational form enabling the interviewer to rate the respondent as to cooperativeness, language comprehension and usage, and ethnicity.

In the spring of 1979 the English version of the parent questionnaire was field tested with six parents from a Los Angeles Head Start program. The background characteristics of these parents resembled those of the intended sample. In October 1979 the Spanish translation of the English version of the parent questionnaire was piloted with a similar sample from the same area. The results of these pilot tests suggested that no alteration should be made other than to ensure the appropriateness of the Spanish version for the different language dialects in which the Head Start centers are found.

Parent Interview Administration. Parent interview administration was originally scheduled to take place concurrently with the collection of child impact measures. Owing to delays in OMB approval, however, data collection began after most sites had completed the pretesting of experimental and control group children. Across each of the eight sites, 518 parents or secondary caretakers were administered the parent instrument. The timeline for data collection varied from site to site as a consequence of the availability of local interviewers, accessibility of respondents, and the training schedule. Wherever possible, interviews took place in the homes of the respondents. The interviews began in early November 1979 and were completed at all sites by mid-January 1980.

Two bilingual Juarez and Associates' staff members experienced in survey research served as interview supervisors for the eight replication sites. These interview supervisors were trained over a two-day period in mid-October 1978. The training included presentations on questionnaire item review and justification, role of the interview supervisor, recruitment and screening of interviewers, scheduling of interview procedures, and training of local interviewers. The supervisors were also provided with a field manual (Appendix E) to help ensure consistency in training of local interviewers and in data collection procedures.

At each site local interviewer candidates were screened for language proficiency in Spanish and English. Selection was based on the candidates' educational background and work experience as well as on their degree of language proficiency.

Successful candidates underwent two days of training consisting of four main parts: (1) introduction to the firm and the evaluation, (2) interviewing procedures, (3) questionnaire format and conducting the interview, and (4) practice interviews. Some of the local interviewers had previously served as test examiners for the child impact measures. The issue of confidentiality for all collected data was stressed to all local interviewers during training and in their interviewer manuals (Appendix F).

In the field the interview supervisors were responsible for verifying the interview results at the various sites. This was accomplished by telephoning a 10 percent sample of each interviewer's respondents subsequent to the interview to validate that an interview had actually been conducted at the assigned address with the proper respondent. Supervisors either hand-carried the data to the Juarez and Associates Los Angeles office or made arrangements for shipment to that locale.

Items were clustered according to theoretical concerns and ACYF contractual obligations. The clusters included background characteristics of parents, family composition, language ability and usage, parental aspirations for their children, and parental attitudes toward education. Items used to measure various dimensions of these constructs were aggregated into a series of scales and items of each scale were examined for their internal consistency. As the general focus of the analysis was to determine the equivalency of the control and experimental parents, chi-square analysis was used for each site to assure the equality of groups on such variables as ethnic composition and sex. This analysis, as well as multivariate and univariate analyses of variance, were employed to establish equivalency between groups on the series of constructs mentioned above.

The various scales that were created and the respective questions used to compose them are presented in Table 1. Where appropriate, the internal

Table 1

Internal Consistency Coefficients
For Subscales from the Parent Questionnaire

Subscales	Items	α
1. Attitudes toward bilingual education	1. Speaking English is important for my child's success in school. 2. Schools should teach my child a second language. 3. Learning Spanish helps my child to get along with others in school. 4. Learning English helps my child to get along with others in school. 5. Being bilingual will help my child to be successful. 6. Being bilingual will help my child to get a good job. 7. A child must learn a first language before learning a second language. 8. Learning English will help my child to make friends in school. 9. Spanish should be used to teach my child customs of Spanish-speaking people. 10. It is important for my child to be bilingual. 11. Spanish-speaking children should be taught customs of others. 12. It is important for my child to read and write Spanish.	0.77
2. Attitudes toward school in general	1. Parent should have an interest in school. 2. Parent should call his/her child's school once a year. 3. Parent should visit his/her child's school at least once a year. 4. Parent should volunteer to help in his/her child's class.	0.76
3. The purpose of education	1. Schools should prepare children to get a job. 2. Schools should teach children to read and write. 3. Schools should teach children arithmetic. 4. Schools should help develop children's personality. 5. Schools should teach children to be cooperative.	0.67
4. Language ability and usage*	English 1. Respondent understands English. 2. Respondent speaks English. 3. Respondent reads English. 4. Respondent writes English.	0.96
5. Language ability and usage**	Spanish 1. Respondent understands Spanish. 2. Respondent speaks Spanish. 3. Respondent reads Spanish. 4. Respondent writes Spanish.	0.87

* These items were coded using a three-point scale with 1 = English, 2 = both English and Spanish, and 3 = Spanish.

** Parents were asked to rate children's language ability in English and Spanish on a four-point scale, 1 = not at all to 4 = very well.

consistency coefficient is also reported. It should be noted that owing to the delays in data collection, a subsample of 256, representing 50 percent of the final population of parents, was used in this exploratory analysis. Data from the entire sample are to be reanalyzed at a later date in order to verify these scales.

C. Teacher Questionnaire

A 50-item teacher questionnaire (see Appendix C) was specially developed by Juarez and Associates for use as a pre- and posttest instrument. The instrument is intended to assess teachers on their (1) understanding of what is meant by the terms "bilingual" and "bicultural" in the context of an early childhood program, (2) attitudes toward Spanish-dominant and bilingual Head Start children and their parents, (3) willingness to include parents as well as information collected from them in the instructional program, (4) sensitivity to the special ethnic and linguistic characteristics of Spanish-dominant and bilingual Head Start children and willingness to incorporate these characteristics in a positive fashion in the teaching-learning process. Once a preliminary questionnaire was developed, it was distributed to outside consultants and to the curriculum model developers for their comments. After the instrument was revised according to suggestions from these individuals, the questionnaire was pilot tested at all of the evaluation sites. Additional revisions based on the pilot were followed by normal OMB submission and clearance.

Administration of Teacher Instrument. The teacher questionnnaire data were gathered at each of the eight replication sites in the fall of 1979 at the time of the administration of the pretest battery of tests to children. As part of their training, the test supervisors received instruction in the administration of the teacher questionnaire and subsequently collected data. A total of 21 teachers and 23 teacher aides composing all of the teaching staffs in the experimental classrooms were administered the questionnaire. The administration generally took place at an agreed-upon time with the entire sample for a site filling out the questionnaire at the same time. This group administration of the questionnaire, with the test supervisor present, took from 30 to 45 minutes in each instance. Each individual chose a Spanish or English version of the questionnaire depending on his or her linguistic preference.

All questionnaires were returned to Juarez and Associates for coding. First, the items in the questionnaire were grouped into appropriate domains in accord with the contents of each item. Second, answers to open-ended questions were extracted and analyzed for their content before final coding and subsequent computer analysis.

A series of five open-ended items which asked teachers and aides to identify the major advantages of being bilingual and of participating in a bicultural/multicultural curriculum for both Spanish and English native speakers was used as an indication of the sample's understanding of the concepts "bilingual" and "bicultural." A second set of questions consisting of 18 items in a five-point Likert-type format, varying from "strongly agree" to "strongly disagree," served as a measure of teaching-staff attitudes toward Spanish-speaking children and their parents. A similar format was used to investigate willingness of teachers to include information received from parents as well as the parents themselves in an instructional program. Ten questions with a total of 21 items were used not only to assess the respondents' perception of the utility of parent involvement but also to elicit opinions as to how parents could be most effectively used. A final set of 10 items provided information on the importance the teachers and aides place on incorporating certain materials or lessons geared to the needs of Hispanic or bilingual children into the teaching-learning process.

D. Problems Encountered in the Collection of Data

Problems encountered in the collection of data at the eight replication sites included delays in the recruitment of children owing to funding lags and difficulties in random assignment to experimental and control groups, postponement of the starting dates of the Head Start centers, lack of a control group (no treatment) at some sites, inoperability of the test scheduling plan, and the unavailability of appropriate space conducive to the testing of children.

Each of the replication sites had to satisfy a number of criteria to be eligible to participate as a center for the implementation of a curriculum model. One of these criteria concerned the recruitment of 90 children, of whom 45 were to be randomly assigned to the experimental and 45 to the control group. To assist in this task, ACYF was to have funds available at each center to recruit a health services coordinator. However, the funds for the hiring of this individual arrived late at some sites and were never used at others. At certain sites, therefore, recruitment did not occur, and even where health coordinators were hired they began work after testing had started. Thus, there was considerable difficulty in securing the desired number of children to be assigned to the two groups. In effect, the plan to use the health services coordinator for recruiting children did not function as intended.

Delays in the dates at which the Head Start centers were able to begin the school year posed another problem. Renovation construction at one Head Start center forced more than a month's delay in opening for the school year. At another site problems with recruitment, transporting children, and internal organization caused almost three weeks' delay. Weather conditions at one site caused a one-week delay as torrential rains closed down the city.

There were also problems with the scheduling of children for testing. The scheduling of the experimental group in many instances was disrupted by meals, rest or nap periods, play time, and absence due to illness. Other activities of the Head Start centers such as staff meetings, in-service training periods, and parent meetings also made the original testing schedule for the experimental group unfeasible. The scheduling of control group children presented different problems. At some sites it was necessary to hire a person to stay with the children while they were waiting to be tested. Parents of the control group children were also less likely to keep appointments for testing, as they had little incentive to remain as participants in the study. Many control group children needed transportation to the testing site, as parents either had little reason to see that the children arrived for testing or were without the necessary resources to transport them. Three Head Start centers reported this kind of transportation problem (Corpus Christi, Laredo, Milwaukee), and Juarez and Associates had to provide transportation (by bus or automobile) for the control group children to be tested at the center. Since recruitment at several sites was not completed prior to the testing period, the scheduling of control group children for testing had to await the arrival of additional children.

Other problems encountered during the collection of the children's test data were related to the appropriateness and availability of testing facilities. Although the staff members at all of the centers were very accommodating, there was limited or no space available for testing at most sites and it was necessary to move testers around from day to day. At one site it was necessary to rent the facilities of a neighborhood church for the testing. At others, arrangements were made with community centers and nearby schools for the use of space. Generally, at all sites two people had to work in a single small room with no windows and little ventilation. These small rooms were either divided by screens or children were placed back to back in an effort to reduce distractions. At one site (Milwaukee) renovation and construction of the center limited the space available and created unnecessarily high noise levels. Weather conditions were less than favorable in at least two of the sites (East Los Angeles, Rio Grande). At East Los Angeles, examiners and children were distressed by the heat until Juarez and Associates provided electric fans. The effort made to collect the parent data was slowed by delays in OMB approval of the parent instrument, as well as by the late opening date of some centers and the lack of health services coordinators mentioned previously. These factors resulted in a very short time for data collection. Where a health services coordinator was not hired, establishing contact with the parents was difficult.

No major problems were encountered during the collection of the teacher data. Although the plan was to administer the teacher questionnaire to all teachers and teacher aides in a group session, in some sites this was not possible because of scheduling conflicts. At these sites, the questionnaire was administered individually to those who could not attend the group session.

CHAPTER III

DATA ANALYSIS

The purpose of this section is to provide a description of the data analysis used in the evaluation. This analysis consists of a delineation of all study variables including data from children, parents, and teachers; a description of the various evaluation designs at each evaluation site and their limitations; and an explanation of statistical procedures to test hypotheses regarding Head Start children and control group children.

A. Study Variables

The study variables of the pretest are presented for each participant group involved in the evaluation. In Tables 2a, 2b, and 2c, variables are classified as dependent or independent and are presented with the data source, type of instruments used, respondents assessed, size of sample, frequency of assessments, and finally the unit of measurement to perform the analysis. These classifications are used to denote how the study variables fit within the analytical framework of the evaluation. Although the measures listed in Tables 2a, 2b, and 2c include interviews and observations from the ethnographic component, in this report only the psychometric data are presented. Dependent variables are defined as those expected to exhibit the effects of the program. Independent variables are seen as those expected to affect the behavior of the individuals participating in the evaluation. In addition, independent variables have been classified as either dynamic or static. Dynamic variables are those subject to change over the course of the evaluation and moderating the effects of the program; for example, the attitudes of parents toward the use of English or Spanish, which may affect a child's use of that language in the home. Variables classified as static are those that will not immediately manifest the

Table 2

A. Assessment of Head Start Staff

PROGRAM/STAFF/DYNAMIC

INDEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
Teacher turnover	PR & IR interviews/notes	Head Start staff	site	Pretest only	site
Teacher's general feelings about parents and children	Parent Questionnaire	Teachers and aides	Approx. 3 teachers and 3 aides	Pre and post	site
Teacher's attitude to bilingual education	Teacher Questionnaire	Teachers and aides	Approx. 3 teachers and 3 aides	Pre and post	site
Teacher's knowledge of bilingual and bicultural education	Teacher Questionnaire	Teachers and aides	Approx. 3 teachers and 3 aides	Pre and Post	site
Teacher's general educational beliefs/ values	Teacher Questionnaire	Teachers and aides	Approx. 3 teachers and 3 aides	Pre and Post	site

Table 2

A. Assessment of Head Start Staff (Continued)

PROGRAM/STAFF/STATIC INDEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
Teacher's Head Start experience	Teacher Questionnaire (J & A's Teacher Questionnaire)	Teachers and aides	Approx. 3 teachers and 3 aides/site	Pre and Post	Individual
Teacher's language ability	1. Teacher Questionnaire 2. P.R. interviews/notes	Teachers and aides	Approx. 3 teachers and 3 aides/site	Pre and Post Twice a year	Individual
Teacher's ethnicity	Teacher Questionnaire Some items in the Teacher Questionnaire will be asked only once	Teachers and aides	Approx. 3 teachers and 3 aides/site	Pre and Post	Individual
Teacher's educational background	Teacher Questionnaire Some items in the Teacher Questionnaire will be asked only once	Teacher and aides	Approx. 3 teachers and 3 aides/site	Pre and Post	Individual
Teacher's salary	Teacher Questionnaire Some items in the Teacher Questionnaire will be asked only once	Teachers and aides	Approx. 3 teachers and 3 aides/site	Pre and Post	Individual

Table 2

B. Assessment of Parents

FAMILY/INDIVIDUAL/DYNAMIC

DEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
Parents' Language Ability Mother Father	1. Parent Questionnaire 2. Phone call updates	Parents	Total of parents at sites	Pre and Post	Individual parents
Language used at home	1. Parent Questionnaire 2. Phone call updates	Parents	Total of parents at sites	Pre and Post	Individual parents
Parental aspiration for children	1. Parent Questionnaire	Parents	Total of parents at sites	Pre and Post	Individual parents
Activities in the home	1. Parent Questionnaire 2. Phone call updates	Parents of Head Start Control	Approx. 45 parents of Head Start and 45 of Control Subsample 15 Control 15 Head Start	Pre and Post	Individual parents Family
Parental involvement in classroom activities	1. Parent Questionnaire 2. Ethnographic notes	Parents of Head Start children	Approx. 45 parents of Head Start	Pre and Post Weekly	Individual Parents and classroom

Table 2

B. Assessment of Parents (Continued)

FAMILY/INDIVIDUAL/STATIC

DEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
Mother's income	Parent Questionnaire	Parents	Approx. 45 Head Start and 45 Control parents	Pre and Post	Individual
Father's income	Parent Questionnaire	Parents	Approx. 45 Head Start and 45 Control parents	Pre and Post	Individual
Family income	Parent Questionnaire	Parents	Approx. 45 Head Start and 45 Control parents	Pre and Post	Family
Family structure	Parent Questionnaire	Parents	Approx. 45 Head Start and 45 Control parents	Pre and Post	Family
Mother's education	Parent Questionnaire	Parents	Approx. 45 Head Start and 45 Control parents	Pre and Post	Individual

Table 2

C. Child Assessment Instruments

DEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
English language production	1. You Say It 2. English BSM	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
Spanish language production	1. Dímelo Tú 2. Spanish BSM	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
English language comprehension	Listen to the Story	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
Spanish language comprehension	Escuchen Este Cuento	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
Concept development assessed in English	Preschool Cooperative Inventory (English version)	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child

Table 2

C. Child Assessment Instruments (Continued)

DEPENDENT VARIABLE	INSTRUMENTS & DATA SOURCE	RESPONDENT(S)	SAMPLE SIZE	FREQUENCY	UNIT OF ANALYSIS
Concept development assessed in Spanish	Preschool Cooperative Inventory (Spanish version)	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
Socioemotional development	Socioemotional observational form	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Individual child
Language preference	Language Check Parent Questionnaire	Head Start and Control children	45 Head Start and 45 Control	Pre and Post	Indidivual child
Number of days of instruction	Absence Sheets 1 PR - IR Notes	Head Start and Control children	45 Head Start and 45 Control	Continuous	Individual child
INDEPENDENT VARIABLE					
Chronological age of child (in months)	Parent Questionnaire (Some items will be asked only once)	Parent of Head Start and Control children	45 Head Start and 45 Control	Pretest only	Individual child
Child ethnic group	Parent Questionnaire (Some items will be asked only once)	Parent of Head Start and Control children	45 Head Start and 45 Control	Pretest only	Individual child
Previous preschool experience	Parent Questionnaire (Some items will be asked only once)	Parent of Head Start and Control children	To be determined	Pretest only	Individual child

effects of the programs.

Evaluation Designs and Limitations

The original ACYF evaluation contract called for a stratified randomization of English- and Spanish-dominant children to the experimental program and to the respective control groups in each of the evaluation sites. Control groups were to receive no preschool exposure, and the experimental children were to be exposed to the curriculum of the various bilingual Head Start programs. The objective of this design was to conduct a true experiment for the purpose of detecting programmatic effects. In such a design, all preexisting abilities and personal characteristics of the children and their parents are considered to be equally distributed between the experimental and control groups. Any posttest differences between these groups can then be attributed directly to program effectiveness.

As is often the case in program evaluations, practical, ethical, and logistical considerations made random assignment of children into an experimental or control group difficult and at times impossible. As shown in the previous chapter, the original evaluation design which called for random assignment of 90 children at each site to a no-treatment control and a treatment experiment (Head Start) group was not met at a number of the sites. Enrollment policies evolving in response to local community needs and general Head Start policies led to a specific evaluation design for each site. Following is a description of each design.

Description of Evaluation Design

ALERTA MODEL

Lower East Side, New York. A total of 44 nonrandomly assigned children comprise the sample at this site. The control group consists of 10 children recruited from the Head Start waiting list. The experimental group (n = 34) was assigned to two classrooms. Furthermore, of the 34 experimental group children, 20 do not satisfy the minimal evaluation criteria for age and non-Head Start experience. The resultant evaluation design is a compromise experimental group/control group design (Kerlinger, 1973).

South Bronx, New York. A total of 69 children comprise the sample of children at this site. Forty-five children were nonrandomly assigned to the experimental group. Twenty-four children assigned from the center's waiting list comprise the stay-at-home control sample. The resultant experimental group/control group design is a compromise.

AMANECER MODEL

Corpus Christi, Texas. A total of 45 children from a list of 90 children were randomly assigned to either an experimental (n = 45) or an at-home control (n = 45) group. The experimental group is located in three classrooms at the Corpus Christi Head Start Center. The control group was originally an at-home sample, but because no health service coordinator was hired to maintain contact with the parents and to inform them of health care benefits that would accrue to their children, 80 percent of the children in the original at-home control sample dropped out of the study. Consequently, another control sample of 35 at-home children was recruited. Additional children were recruited because it was logistically impossible to test the original control group sample. The resultant evaluation design is a true experimental design.

Laredo, Texas. A total of 90 children comprise the sample at this site. Forty-five of the children were nonrandomly assigned to the experimental group. These children were distributed over three classrooms at the Laredo experimental Head Start Center. Thirty-four control children were drawn from five classrooms in other Head Start centers. These children constituted a portion of the control group (control-with-treatment). Eleven additional children represented a convenient stay-at-home control sample. The resulting evaluation design was a nonrandom compromised experimental treatment group, comparison control group with treatment, and a stay-at-home no treatment pre- and posttest design.

NUEVAS FRONTERAS MODEL

Rio Grande, Texas. A total of 79 children was randomly assigned to either an experimental group (n = 41) or control-with-treatment group (n = 38) sample at the Rio Grande site. The complete randomization at the Rio Grande site resulted in a true experimental design.

Corona, California. A total of 79 children was nonrandomly assigned to either an experimental group (n = 39) or to a control group (n = 40). Thirty-nine children from the experimental group were distributed among three classrooms at the control Head Start Center, and 40 control children were distributed among three classrooms at the control Head Start Center. The evaluation design is a compromised experimental group/control group design.

UN MARCO ABIERTO MODEL

East Los Angeles, California. A total of 90 children was randomly assigned to either an experimental group (n = 45) or a control group (n = 45). The 45 children randomly selected from a list of 90 children comprise the experimental group. The experimental children were randomly assigned to three classrooms at the experimental Head Start Center. Of the 45 students that comprise the original control sample, 30 children dropped out of the study. Therefore, one classroom or 15 students from the original list of 90 remain, while the other 30 children were nonramdonly selected to serve as members of the control group. The resultant design is a compromise experimental group/control group design.

Milwaukee, Wisconsin. A total of 72 children comprise the sample at this site. The experimental sample was randomly assigned from an original list of 90 children to either an experimental or a stay-at-home control group. Classes did not begin until October 22, 1979, at which time testing began. Because of the long delay in opening the center, a high attrition rate was observed in the experimental and control groups. Thus, recruitment of additional children was undertaken to increase the number of children in both the experimental and control groups. The final pretest sample consisted of 42 selected experimental group children, while the control group consisted of a nonrandom sample of 30 children, 24 involved in the Home Base program (treatment) and 6 in the stay-at-home (no treatment) group.

In summary, the evaluation contractors were able to obtain: (1) complete random assignment at only one site, Corpus Christi; (2) random assignment of children to an experimental group and comparison Head Start group at three other evaluation sites, Rio Grande, East Los Angeles, and Corona; and (3) assignment to treatment and control on a nonrandom basis at the remaining evaluation sites, Laredo, Milwaukee, Lower East Side, and South Bronx. Thus, the original design remains intact at Corpus Christi and may actually have been strengthened at the three sites where a comparison group exists. The existence of control groups which are to receive educational experiences for the duration of the evaluation permits the exploration of questions beyond those required by the evaluation contract. In these instances posttest comparisons between experimental and control groups will focus on the unique incremental effects of the bilingual portion of the curriculum model above and beyond the effects of the regular preschool program. This can be viewed as preschool instruction effects versus preschool instruction effects plus bilingual instructional effects. Therefore, at the sites where the comparison group is composed of children attending a nearby Head Start Center, it is possible to identify the amount of unique variation due to the bilingual component of the models.

The resultant designs for both New York sites, Laredo, Corona, and Milwaukee are referred to by Kerlinger (1973) as a compromise experimental group/control group design. Such a design is said to be typical of many constructed in field evaluations due to the tendency of programs to rarely if ever accept children on a random basis. Rather, programs typically accept children on a first-come basis or some other child-related criteria, making random assignment ethically and politically difficult. It should be pointed out that in the present evaluation the resultant designs have ecological validity as they facilitate observation of program effectiveness in natural settings under typical conditions.

B. Analysis Procedures for Child Data

A major purpose of the four bilingual curriculum models is to develop skills in two languages, Spanish and English. Those children who are presently considered to be Spanish-preferred should show gains not only in their native language but also in English. Similarly, English-preferred children should progress not only in English, but through bilingual instruction should acquire skills in a second language (Spanish) that would not be afforded through a monolingual curriculum. The analysis parallels this conceptualization. By initially identifying the language preference of each of the children, it will be possible to measure growth in the native language and in the second language.

Therefore, at any given site, four separate analyses were conducted. Comparisons between experimental and control group performance were made for the following combination of language groupings:

1. English Preferred -- First Language Performance
2. Spanish Preferred -- First Language Performance
3. English Preferred -- Second Language Performance
4. Spanish Preferred -- Second Language Performance

This approach was selected because the individual instruments of the test battery cannot be considered parallel in the two languages. Thus, data are always presented by preferred language group for each measure. For the purposes of this report, the term "preferred language" is used interchangeably with "first language" and "nonpreferred language" is used interchangeably with "second language."

In analyzing the data two problems were encountered. First, the sample at some sites was unbalanced in respect to the composition of English and Spanish speakers. For example, at Corpus Christi 98 percent of the sample were English speakers and 2 percent Spanish speakers, whereas at the sister site, Laredo, 98 percent of the sample was Spanish speaking and 2 percent was English speaking. Second, the numbers of children in the experimental and control groups varied across each evaluation site. To take into account the disproportionate size of these cells, a decision rule was established. If the size of the group was less than 10, the group was not included in any subsequent analyses since interpretation of results from such a small number of children would be meaningless. However, the results for all groups no matter how small are reported for the reader's information.

The analysis of the child pretest data included the use of several tests of significance. A 2 x 2 multivariate analysis of variance (site x 2 groups, experimental and control) (MANOVA) was performed (1) to test for differences between the replication sites of each model, (2) to compare experimental and control groups, and (3) to test for site-by-group interactions. This analysis was conducted at those sites meeting the sample size criterion, and the proportion of a specific language group was equivalent between sites. It was principally used to determine the feasibility of collapsing the child data across sites.

Hotelling's (multivariate) T^2 test was employed for specific comparisons where between-site analysis was not feasible. These multivariate tests of significance were used to control the type I error rate and to account for the lack of independence in the scores on the test battery. The type I error rate represents the chances of detecting significant differences between control and experimental groups when in fact they do not exist. The use of multiple univariate tests (e.g., simple t-tests), tends to increase this error, especially when the test scores are correlated. Since the assumptions required to conduct a "repeated measures" analysis of variance are infrequently met in practice, the decision was made to adopt the multivariate tests. A level of $p > .05$ was established for statistical significance.

Comparisons between children's first and second language performance have not been made since the English and Spanish language versions of the test battery appear to be similar but not strictly parallel. Children at each site were administered tests in their first and second language. The first language measures of the test battery consisted of seven cognitive measures: (1) language comprehension, (2) concept development, (3) perceptual motor ability, (4) narrative production, (5) narrative quality, (6) descriptive ability, and (7) syntactical development. The four tests used to assess second language are (1) language comprehension, (2) concept development (3) perceptual motor ability, and (4) syntactical development. Since the socioemotional and syntactical development instruments differed in their conceptual nature, these tests were analyzed separately from the other measures of the test battery.

C. Analysis Procedures for Parent Data

The analysis procedures for the parent data consisted of three steps. First, items from the questionnaire were clustered according to theoretical concerns and ACYF contractual obligations. The resultant subscales include background characteristics, language ability and usage, and attitudes of parents towards bilingual bicultural education and education in general. Second, the subscales were examined for internal consistency. They are used as variables for establishing equivalency between parents of the experimental and control children at each site. Third, the analysis of the responses on the parent questionnaire was subjected to tests of significance. Statistical comparisons were made between parents of experimental and control children within a site using chi-square and univariate t-tests. In addition, MANOVA was employed to establish equivalency between groups within a site and to test for differences between sites within a model.

D. Analysis Procedures for Teacher Data

Owing to the small sample of teachers and aides (44), the analysis of the teacher data was limited to the use of frequency distributions and cross-tabulations. This allowed comparisons among teachers on background and attitude variables.

CHAPTER IV

RESULTS OF THE PRETEST

In this chapter the results of the child test battery pretest, parent interview, and teacher questionnaire are presented. These results are given in alphabetical order by model for each of the eight evaluation sites. Descriptive statistics used to characterize the sample at each site are followed by a summary of the results of the various analyses. The data of the child test battery, parent interview, and teacher questionnaire are presented separately.

A. Pyschometric Tests

The results of the child test battery were analyzed in the following manner. As mentioned previously, statistical tests for mean differences in cognitive performance between control and experimental children were conducted using either a 2 x 2 (2 sites x 2 groups, experimental and control) multivariate analysis of variance (MANOVA) or a multivariate t-test (Hotelling's T^2). The former test was used when the proportion of children within each cell of the 2 x 2 table was approximately equal. When this condition was not met, i.e., when the percentage of children in a particular language grouping varied significantly between sites, separate multivariate t-tests were conducted within each site. In these cases no comparisons of test performance between sites were made. In either case when multivariate statistical significance was reached, separate univariate tests were conducted to localize the source of the differences. Analyses of experimental-control differences on socioemotional and syntactical development were conducted separately from the rest of the test battery owing to the conceptual nature of those measures. Various demographic characteristics of children, such as sex, language preference, and ethnicity, were compared using the χ^2 statistic. Although means and standard deviations are reported in the child data tables, percent of correct responses is given in the text to indicate the difficulty level of each test. Along with a summary of the results of the pretesting at each site is a discussion of the comparability of the experimental and control groups within a site and comparisons between sites within a model.

B. Child Outcome Measures

ALERTA MODEL

Lower East Side, New York

Twenty-nine children were tested at the Lower East Side, New York, site. Of the 19 children assigned to the bilingual Head Start group, 15 were identified as being English-preferred while 7 of 10 children recruited for the stay-at-home control group were similarly identified. The ethnic composition of the two groups was quite similar. Over 63 percent of the experimental children were of Puerto Rican origin, while 32 percent were identified as black and 5 percent identified as Dominican. In the control group Puerto Rican and Dominican children made up 80 percent and 20 percent of the sample, respectively. Approximately 50 percent of both the experimental and control group children were male. No statistically significant differences were observed on any of these demographic characteristics.

It is important to note that over 84 percent of the experimental children were exposed to previous preschool experience, while only 20 percent of the control children had such experience. This disproportion was found to be statistically significant. As will be seen, this difference did not contribute to any differences in pretest performance (see Table 3).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). As can be noted by examining the means and standard deviations in Table 4a, essentially no differences in first language comprehension performance were

Table 3

Background Characteristics of the Children for Alerta Head Start Sites

	Lower East Side		South Bronx	
	Experimental	Control	Experimental	Control
Sex				
(Means in Months)	51.5	51.9	49.9	50.2
Sex				
Boys	9	5	6	14
Girls	10	5	24	10
Language Preference				
Spanish	4	3	12	11
English	15	7	18	13
Previous Preschool Experience				
Yes	16	2	0	0
No	3	8	30	24
Ethnicity				
Black	6	0	7	7
P.R.	12	8	20	13
Dominican	1	2	0	2
South American	0	0	2	1
Other ___________	0	0	1	1

observed between experimental and control English-preferred children. When these groups took the test in the second language (Escuchen Este Cuento), English-preferring children in the experimental group responded correctly to an average of 27.3 percent of the items, while the control children performed at an average of 38 percent correct.

The Spanish-preferred experimental children responded correctly to 37.3 percent of the items, while the control children scored an average of 53.3 percent correct when they were measured in their first language. When the language comprehension measure was given in their second language (Listen to the Story), experimental children obtained 36.6 percent and control children 26.6 percent mean correct responses. The small number of Spanish-preferring children in both groups (n = 4 and 3, respectively) made it unfeasible to use statistical tests to establish significant differences on this and other measures.

Listen to the Story and Escuchen Este Cuento appeared to be a difficult first language measure for children at the Lower East Side site and a very difficult test in the second language. As the means and standard deviations from Tables 4a and 4b indicate, none of the children approached maximum performance on the test, thereby providing sufficient room for growth in language comprehension at the posttest.

2. Language Production (Dimelo Tu and You Say It). The administration of these tests to assess language production was limited to the child's preferred language. Part II of the test You Say It, a description task, varied in difficulty from moderate for English-preferred experimental (45 percent) and control children (43.3 percent) to very difficult, with Spanish-preferred experimental and control children answering correctly only 21.4 percent and 24.2 percent of the items, respectively.

The English-preferred experimental and control children generated a mean of 40.1 and 38.6 words, respectively, in the narrative production task of Part III

Table 4 a

Results of Pretest in the Child Assessment Instruments for the Alerta Model for the English-Preferred Children

MEASURES	NUMBER OF ITEMS	Lower East Side (N=22)				South Bronx (N=31)			
		EXPERIMENTAL (n=15)		CONTROL (n= 7)		EXPERIMENTAL (n=18)		CONTROL (n=13)	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Check	16	13.2	(1.9)	13.3	(1.9)	13.0	(2.2)	14.5	(1.8)
Socioemotional	25	18.4	(2.0)	17.4	(3.6)	18.1	(2.2)	18.2	(3.9)
Preschool Inventory									
Preschool Inventory-Spanish	26	15.0	(5.1)	14.4	(7.6)	16.0	(6.1)	19.7	(7.9)
Preschool Inventory-English	26	3.8	(5.0)	9.7	(8.2)	3.4	(6.1)	3.7	(5.9)
Perceptual Motor									
Spanish	4	1.9	(0.3)	1.7	(0.8)	1.9	(0.3)	1.8	(0.6)
English	4	0.8	(1.0)	1.1	(1.1)	0.5	(0.8)	0.5	(0.9)
Language Comprehension									
Escuchen Este Cuento	15	4.9	(1.4)	4.9	(1.3)	6.8	(3.0)	8.3	(3.0)
Listen to the Story	15	4.1	(3.0)	5.7	(4.4)	4.3	(4.7)	2.9	(3.9)
Language Production									
Quantity of words in Spanish		40.1	(29.6)	38.6	(36.2)	32.6	(32.3)	20.3	(11.6)
Quality		10.1	(3.9)	9.1	(4.2)	7.8	(4.6)	8.0	(3.9)
Description	7	2.7	(1.6)	2.6	(1.4)	2.6	(1.3)	2.8	(1.5)
Bilingual Syntax Measure- English		4.0	(0.9)	3.8	(0.7)	2.7	(1.5)	3.1	(1.1)
Bilingual Syntax Measure- Spanish		0.8	(1.6)	1.9	(2.1)	0.9	(1.5)	0.9	(1.8)

Table 4 b

Results of Pretest in the Child Assessment instruments for the Alerta Model for the Spanish-Preferred Children

MEASURES	NUMBER OF ITEMS	Lower East Side (N= 7)				South Bronx (N=23)			
		EXPERIMENTAL (n=4)		CONTROL (n=3)		EXPERIMENTAL (n=12)		CONTROL (n=11)	
		X̄	SD	X̄	SD	X̄	SD	X̄	SD
Language Check	16	13.0	(2.4)	13.3	(2.1)	12.8	(2.0)	12.7	(2.7)
Socioemotional	25	19.7	(2.6)	16.3	(4.0)	18.6	(2.9)	18.2	(3.8)
Preschool Inventory									
Preschool Inventory-Spanish	26	11.2	(4.6)	0.7	(1.2)	9.8	(9.3)	11.7	(8.4)
Preschool Inventory-English	26	12.2	(1.9)	10.7	(7.8)	16.7	(6.9)	16.3	(7.2)
Perceptual Motor									
Spanish	4	2.0	(0.0)	0.0	(0.0)	1.1	(1.0)	1.5	(0.8)
English	4	2.0	(0.0)	1.3	(1.1)	1.7	(0.6)	1.9	(0.3)
Language Comprehension									
Escuchen Este Cuento	15	5.5	(1.0)	4.0	(3.6)	7.3	(3.7)	7.5	(3.9)
Listen to the Story	15	5.6	(1.3)	8.0	(3.6)	7.8	(3.4)	8.5	(3.7)
Language Production									
Quantity of words in Spanish		58.5	(54.4)	28.3	(15.7)	54.2	(58.4)	41.6	(38.8)
Quality		9.7	(7.0)	5.7	(1.2)	9.5	(5.4)	9.7	(6.1)
Description	7	1.5	(1.0)	1.7	(2.1)	2.7	(1.3)	1.8	(1.2)
Bilingual Syntax Measure-Spanish		3.6	(3.1)	2.9	(1.0)	3.2	(1.7)	3.5	(1.2)
Bilingual Syntax Measure-English		3.5	(0.8)	0.6	(0.9)	1.1	(1.5)	2.1	(0.7)

(Classroom Scene). The mean number of words for Spanish-preferring children in Part III Narrative Production (Front Yard Scene) was 58.5 in the experimental group compared to only 28.3 words for those in the control group.

In the series of follow-up questions measuring the quality of the narrative, those children identified as English-preferred obtained a mean 9.1 for the control group and 10.1 for the experimental group, while the Spanish-preferred children obtained means from 5.7 (control) to 9.7 (experimental) in the 20 possible categories.

3. Language Acquisition (Bilingual Syntax Measure, BSM). For the 15 experimental and 7 control group children classified as English-preferred whose test were scorable, there was no significant difference between the average mean length of utterance (MLU) in either English or Spanish on the BSM. In English, the English-preferred children in the experimental group scored an MLU of $\overline{X}$ = 4.00 and in the control group an MLU of $\overline{X}$ = 3.78. In Spanish, the English-preferred children in the experimental group scored an MLU of $\overline{X}$ = .78 and in the control group an MLU of $\overline{X}$ = 1.93.

Results of the BSM administered to Spanish-preferred children in Spanish showed a similar average MLU for both experimental ($\overline{X}$ = 3.59) and control ($\overline{X}$ = 2.94) children. Differences between the Spanish-preferred experimental and control group children in English language acquisition were noted, with the experimental children scoring $\overline{X}$ = 3.52 and the control children scoring $\overline{X}$ = .57 MLU. These results suggest that the three experimental group children had similar abilities in both English and Spanish, whereas the three control children evidenced considerably less ability in English than in Spanish.

4. Concept Development (Preschool Inventory, PSI). Twenty-six items of the English and Spanish versions of the PSI were used to assess concept development in both preferred and second languages. Experimental children preferring

English answered on the average 57.6 percent of the items correctly, while controls answered an average of 55.3 percent correctly when given the PSI in English and 14.6 percent and 16.3 percent, respectively, when given the test in Spanish. For children preferring Spanish, scores ranged from a mean of 2.6 percent items correct for second language performance by the control group to a mean of 47 percent correct responses on the first language measures for the experimental group.

A review of the means and standard deviations presented in Tables 4a and 4b indicates that, as expected, children in Spanish and English language groups performed better when concept development was assessed in their primary language.

5. Perceptual Motor Assessment (PMA). The English speakers obtained a mean range of 1.9 (experimental) and 1.7 (control) when they took the PSI in their first language, and 0.8 (experimental) and 1.1 (control) when the test was administered in Spanish. Children in the experimental group preferring Spanish answered 2 of the 4 items correctly in both PSI language versions, while their counterparts in the control group did relatively less well scoring 1.3 in first language and 0.0 in second language.

The scores obtained from both groups of children indicate that the test was difficult, especially when administered in the child's second language, and that gains in perceptual motor skills can be expected for these children at the posttest.

6. Socioemotional Development. Socioemotional development was assessed by using a 25 possible maximum rating scale. Experimental children identified as preferring English received a mean composite score of 18.4 with a standard deviation of 2.0, while those in the control group received a score of 17.4 with a standard deviation of 3.6. Children preferring Spanish received a mean composite score of 19.7 and a standard deviation of 2.6 (experimental) and a mean composite score of 16.3 with a standard deviation of 4.0 (control).

Overall, when examining the mean ratings for experimental and control groups, it appears that the children's socioemotional development was comparable.

South Bronx, New York

Of the 54 children tested at the South Bronx site, 30 were assigned to the bilingual Head Start experimental group and 24 remained as a stay-at-home control group.

In the experimental group 18 children were identified as preferring English and 12 as preferring Spanish. In the control group 13 children preferred English and 11 preferred Spanish.

The ethnic composition of the experimental children was as follows: 20 Puerto Ricans, 7 blacks, 2 South Americans, and one mixed Indian. The control group ethnic composition was as follows: 13 Puerto Ricans, 7 blacks, 2 Dominicans, 1 South American, and 1 child from the Carribean island of Antigua. None of the children from either group reported having previous preschool experience. The average age was 4.2 years for both groups. No significant differences were observed between experimental and control groups on the basis of language preference, age, and ethnic background.

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). When assessed in their first language (Listen to the Story), the English-preferred experimental and control children obtained 45.3 percent and 55.3 percent correct responses, respectively. When they took the test in Spanish (Escuchen Este Cuento), experimental children obtained a mean score of 28.6 percent correct responses and control children a mean score of 19.3 percent.

The mean percent correct score obtained by Spanish-preferred children when taking Escuchen Este Cuento was 52 percent (experimental) and 56.6 percent (control). When second language comprehension was measured for the same language group, experimental children obtained a mean score of 48.6 percent and the control children a mean score of 50 percent.

A review of the means and standard deviations in Tables 4a and 4b, indicates that the language comprehension measures were moderately difficult for both groups. Escuchen Este Cuento was found to be a very difficult test for English-preferred children. None of these children achieved the maximum possible score; therefore, gains in language comprehension may be detected at the time of posttest.

2. Language Production (Dimelo Tu and You Say It). The language production measures, Dimelo tu and You Say It, were administered in the child's preferred language only. In Part II, English-preferred children obtained a mean score of 43.3 percent correct responses (experimental) and 46.6 percent (control), while Spanish-preferred children obtained a mean score of 38.5 percent (experimental) and 25.7 percent (control).

Part II proved to be difficult for children of both groups preferring English or Spanish. Since the maximum possible score was not achieved, changes in test performance may be detected for these children at posttest time.

Experimental children preferring English generated a mean of 32.6 words compared to 20.3 words for the control children in response to Part III, You Say It (Classroom Scene). Spanish-preferred children in the experimental and control groups generated a mean of 54.2 percent and 41.6 words, respectively, in response to Part III, Dimelo Tu (Front Yard Scene).

In the series of follow-up questions, those children identified as English speaking obtained a range of 7.8 (experimental) to 8.0 (control), and the children preferring Spanish scored from 9.5 (experimental) to 9.7 (control) in the 20 possible categories.

No significant differences were found between groups in the language production measures.

3. Language Acquisition (Bilingual Syntax Measure, BSM). Among the English-preferred children whose BSMs could be scored, 16 experimental and 14 control, similar results were obtained in first and second languages. The English-preferred experimental group children registered a mean length of utterance (MLU) of $\overline{X}$ = 2.73, and the English-preferred control group children produced an MLU of $\overline{X}$ = 3.14 when the BSM was administered in the children's first language. In Spanish, the English-preferred experimental group children had an MLU of $\overline{X}$ = .91 and the English-preferred control group children registered an MLU of $\overline{X}$ = .87. No significant differences were found between these groups.

Results of the BSM administered to the 14 Spanish-preferred children of the experimental group and the 9 Spanish-preferred children of the control group who met test criteria were similar in both first and second language acquisition. The Spanish-preferred experimental group scored an MLU of $\overline{X}$ = 3.28 and the Spanish-preferred control group an MLU of 3.88 when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X}$ = 1.76 and the Spanish-preferred control group an MLU of $\overline{X}$ = 1.19. Overall, these results suggest some ability in English for both Spanish-preferring groups.

4. Concept Development (Preschool Inventory, PSI). When the PSI was administered in the child's preferred language, English-preferred experimental children obtained a mean score of 61.5 percent correct responses and control group children 75.7 percent, and Spanish-preferred experimental and control children 64.2 percent and 62.6 percent, respectively. Performance in second language was found to be considerably poorer for English-preferred children, who obtained a mean score of 13 percent correct responses (experimental) and 14.2 percent (control) than for Spanish-preferring children, who scored 37.6 percent (experimental) and 45 percent (control).

Although English- and Spanish-preferring children performed much better in their first language than in their second, none of them achieved a maximum possible score, leaving ample room for change at the posttest.

5. Perceptual Motor Assessment (PMA). Experimental English-preferred children received a mean score of 1.9, while the control group children received a score of 1.8 when the 4 items of the subtest were administered in English. Both groups scored 0.5 when responding in Spanish. When the subtest was given in Spanish to Spanish-preferring children, the mean scores ranged from 1.7 (experimental) to 1.9 (control). When the test was presented in English, experimental children scored 1.1 and control children 1.5.

Examination of the means and standard deviations presented in Tables 4a and 4b suggest no significant differences between groups in either language.

6. Socioemotional Development. On the socioemotional rating scale, English-preferred children received a mean composite score of 18.1 with a standard deviation of 2.2 (experimental) and 18.2 with a standard deviation of 3.9 (control). Experimental and control children preferring Spanish received a mean composite score of 18.6 with a standard deviation of 2.9 and 18.2 with a standard deviation of 3.8, respectively.

A review of the mean ratings for experimental and control groups revealed that children in this sample were comparable in their socioemotional development.

Summary of Pretest Results for the Alerta Model

Owing to the small sample size of the Lower East Side site, statistical tests comparing performance between experimental and control groups were restricted to the respective sites of the Alerta model. Further, no tests were conducted for the Spanish-preferring group at the Lower East Side site. At the South Bronx site separate multivariate significance tests (Hotelling's T^2) were conducted for the English- and Spanish-speaking children in both first and second language measures (see Table 5).

The results of the tests for Spanish- and English-preferred groups indicate preprogram comparability between experimental and control children in first and second language performance. A simple univariate t-test was conducted to detect differences between experimental and control groups on socioemotional development for both English- and Spanish-preferred children at each site. Again these results indicated no difference between experimental and control children in either language group.

In summary, it can be concluded that in both of the Alerta sites comparability exists between experimental and control children on all of the dependent variables.

AMANECER MODEL

Corpus Christi, Texas

Thirty of the experimental children were identified as being English-preferred, and 8 children of that group were identified as Spanish-preferred. Of the control children, 25 were identified as English-preferred, while 6 were Spanish-preferred. On the basis of the language preference results, the groups were not significantly different in their composition.

Table 5

Results of 2 x 2 Manova (Experimental Group x Site)
Significance Tests for First and Second Language
Performance on Child Cognitive Test Battery

	Amanecer Model+			Nuevas Fronteras			Un Marco Abierto		
	Corpus Christi & Laredo			Corona & Rio Grande			Milwaukee & East Los Angeles		
	Site	Group	Site x Group	Site	Group	Site x Group	Site	Group	Site x Group
ENGLISH									
L_1	*	-	-	-	-	-	-	-	-
L_2	-	-	-	*	*	-	*	-	-
SPANISH									
L_1	*	-	-	*	-	-	-	-	-
L_2	*	*	*	*	*	-	-	*	-

- Not Significant.
* $P > .05$.
+ Owing to the sample size the Alerta sites were not included in this analysis.

Approximately 97 percent of the experimental children and 94 percent of the control children were identified as Mexican American. One of the experimental children was Anglo and 2 of the control children were black. Of the entire population only 1 child had any previous preschool experience.

The average age of the Corpus Christi experimental children was 4.4 years and for the control children 4.3 years. No significant differences were observed between the groups in terms of age. Similarly, no significant differences were found in the sexual composition; 58 percent of the experimental group and 55 percent of the control group were males (see Table 6).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). At Corpus Christi, the English-preferred experimental group answered 51 percent of the items correctly, while the control group responded correctly to 43 percent of the items. Translating the mean scores at Corpus Christi on Table 7a into percentages, one notes that children having English as their first language answered 40 percent to 51 percent of the items correctly.

English-speaking children in the experimental group taking the comprehension measure in their second language (Escuchen Este Cuento) answered 46 percent of the items correctly, while control group children in the same language group answered only 41 percent of the items correctly.

Spanish-speaking experimental children answered 59 percent of the items correctly when they took the language comprehension measure (Escuchen Este Cuento) in their preferred language, whereas the controls in the same language group responded to 55 percent of the items correctly.

Examination of the means and standard deviations for the Spanish-preferred children control group, presented in Table 7b, suggests there were differences in performance between controls on first and second language comprehension measures. However, these differences can most likely be

Table 6

Background Characteristics of the Children for Amanecer Head Start Sites

	Corpus Christi		Laredo	
	Experimental	Control	Experimental	Control
Age				
(Means in Months)	52.6	51.5	52.2	51.6
Sex				
Boys	22	17	20	15
Girls	16	14	25	29
Language Preference				
Spanish	8	6	43	40
English	30	25	2	4
Previous Preschool Experience				
Yes	0	1	0	0
No	38	30	45	44
Ethnicity				
Black	0	2	0	1
Anglo	1	0	1	2
Mexican American	37	29	44	41

attributed to the small number of children (6 in the control group and 8 in the experimental group), and one must be cautious in interpreting these differences.

2. Language Production. The use of You Say It and Dimelo Tu tests to assess language production was limited to the child's preferred language. Part II of the test was very difficult for all children in the experimental and control groups of both English- and Spanish-speaking preference, with both groups only answering 40 percent of the items correctly.

Part III narration of You Say It elicited a range of different words; English-speaking children generated a mean number of 41 words for controls and 48.8 for experimentals. Examination of the standard deviations for experimental and control groups speaking English also indicates that the English-speaking children were heterogenous in respect to the number of words elicited in response to part III. For the follow-up questions, experimental children's answers fit at least 50 percent of the word categories, while the control children's answers fit into at least 49 percent of the categories.

Spanish-speaking experimental and control groups answered one-third of the items correctly in the Part II (description) of Dimelo Tu. On Part III (narration), the same experimental and control groups generated approximately 24 words. On the follow-up series of questions, Spanish-preferred children in both groups performed similarly with at least 49 percent of the 20 categories represented by their answers.

3. Language Acquisition (Bilingual Syntax Measure, BSM). Among the English-preferred children, the 31 experimental group children and the 26 control group children who were testable scored similarly on the BSM in both first and second languages. The English-perferred experimental group children registered a mean length of utterance (MLU) of $\overline{X}$ = 3.55, and the English-preferred control group children registered an MLU of $\overline{X} = 3.41$ when the BSM was administered in the children's first language. In Spanish, the English-preferred experimental group children registered an MLU of $\overline{X} = 1.08$, and the English-preferred control group children registered an MLU of $\overline{X} = 1.25$. No significant differences were found between these groups.

Results of the BSM administered to the 7 Spanish-preferred children of the experimental group and the 6 Spanish-preferred children of the control group whose tests were scorable were similar in first language acquisition and favored somewhat the control group in second language acquisition. The Spanish-preferred experimental group scored an average MLU of $\overline{X} = 3.16$ and the Spanish-preferred control group scored an MLU of $\overline{X} -= 3.50$ when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X} - 1.06$ and the Spanish-preferred control group scored an MLU of $\overline{X} = 2.06$. Although the results suggest that the control group overall tended to have a greater command of the second language, no significant differences were found between the two groups.

4. Concept Development (Preschool Inventory, PSI). The Preschool Cooperative Inventory was used in this evaluation to assess language development, general cognitive skills, and concepts in the child's preferred and second language. The Spanish and English versions of the PSI consist of 26 items.

Sixty-four percent and 49 percent, respectively, of the items on the English PSI were answered correctly by the experimental children preferring English. This group did relatively poorly on the Spanish PSI, answering only 21 percent of the items correctly, while the control group iden[illegible]s English-speaking answered only 26 percent of the Spanish PSI items corre[illegible]y.

Forty-four percent of the items on the Spanish PSI were answered correctly by experimental children taking the test in Spanish as their first language, and 41 percent of items were answered correctly by children in the control group identified as preferring Spanish. These same two groups answered 30 and 33 percent of the items on the English PSI, respectively.

As can be seen from Tables 7a and 7b, the mean scores indicate that children in English and Spanish language groups generally performed better when concept development (PSI) was assessed in their first language. The two language versions of the PSI varied from moderately difficult (64 percent and 59 percent for English-preferred experimental and control groups, respectively) on the English PSI to very difficult for Spanish-preferred experimental and control groups (44 percent and 40 percent, respectively) on the Spanish PSI.

5. Perceptual Motor Assessment (PMA). English-preferring children found the English and Spanish versions of the PMA to be moderately difficult. Scores ranged from 1.7 for first language to 2.8 for second language.

Children speaking Spanish (experimental and controls) answered at least 3 of the 4 items correctly on the Spanish subtest of perceptual motor skills. The same children taking this subtest in their second language found the test to be more difficult, with scores ranging from 2.0 to 2.6.

6. Socioemotional Development. The experimental Head Start group identified as preferring English received a mean composite rating of 18.3, whereas English-dominant children in the control group received a mean composite rating of 17.7 on the socioemotional rating scale. The experimental Head Start group identified as Spanish-preferred received a mean composite rating of 16.4. Spanish-preferred children in the control group received a mean composite rating of 17.8. No significant differences between the experimental and control groups, irrespective of language, were found.

Table 7a

Results of Pretest in the Child Assessment Instruments for the Amanecer Model for the English-Preferred Children

		Corpus Christi (N=55)				Laredo (N=6)			
MEASURES	NUMBER OF ITEMS	EXPERIMENTAL (n=30)		CONTROL (n=25)		EXPERIMENTAL (n=2)		CONTROL (n=4)	
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Language Check	16	12.4	(1.7)	13.1	(2.0)	15.5	(0.7)	13.1	(2.0)
Socioemotional	25	18.3	(3.8)	17.7	(5.0)	18.0	(1.4)	17.7	(5.0)
Preschool Inventory									
Preschool Inventory-Spanish	26	16.3	(5.7)	15.5	(5.7)	21.5	(3.4)	15.5	(5.7)
Preschool Inventory-English	26	5.6	(3.8)	6.9	(4.9)	13.5	(7.8)	6.9	(4.9)
Perceptual Motor									
Spanish	4	1.7	(0.7)	1.8	(0.5)	2.0	(0.0)	1.8	(0.5)
English	4	2.8	(1.4)	1.7	(1.0)	3.5	(0.7)	1.7	(1.0)
Language Comprehension									
Escuchen Este Cuento	15	7.7	(2.7)	6.5	(2.6)	8.0	(2.8)	6.5	(2.6)
Listen to the Story	15	6.9	(2.3)	6.2	(2.7)	8.5	(2.1)	6.2	(2.7)
Language Production									
Quantity of words in Spanish		48.8	(31.1)	41.0	(28.2)	16.0	(9.9)	41.0	(28.2)
Quality		10.6	(4.4)	9.9	(4.2)	5.0	(2.8)	9.9	(4.2)
Description	7	2.5	(1.6)	2.6	(1.4)	1.5	(2.1)	2.6	(1.4)
Bilingual Syntax Measure- English		3.5	(1.9)	3.4	(1.5)	3.5	(0.1)	2.4	(1.9)
Bilingual Syntax Measure -Spanish		1.1	(1.7)	1.2	(1.6)	2.6	(0.4)	5.2	(2.2)

Table 7b

Results of Pretest in the Child Assessment Instruments for the Amanecer Model for the Spanish-Preferred Children

MEASURES	NUMBER OF ITEMS	Corpus Christi (N=14) EXPERIMENTAL (n=8) X̄	SD	Corpus Christi (N=14) CONTROL (n=6) X̄	SD	Laredo (N=83) EXPERIMENTAL (n=43) X̄	SD	Laredo (N=83) CONTROL (n=40) X̄	SD
Language Check	16	12.5	(1.9)	11.2	(1.2)	14.0	(1.9)	13.8	(1.9)
Socioemotional	25	16.4	(6.3)	17.8	(2.0)	18.3	(2.6)	18.1	(2.7)
Preschool Inventory									
Preschool Inventory-Spanish	26	7.9	(5.9)	8.7	(4.8)	5.6	(6.4)	5.7	(5.7)
Preschool Inventory-English	26	11.4	(6.3)	10.8	(5.3)	16.6	(4.4)	15.9	(4.0)
Perceptual Motor									
Spanish	4	2.6	(1.5)	2.0	(1.9)	1.3	(1.8)	0.6	(1.2)
English	4	3.2	(0.9)	3.2	(1.0)	13.8	(0.4)	4.0	(0.2)
Language Comprehension									
Escuchen Este Cuento	15	9.0	(2.4)	5.2	(3.4)	8.4	(2.2)	8.8	(2.5)
Listen to the Story	15	8.9	(2.7)	8.2	(3.0)	9.6	(2.3)	9.9	(2.2)
Language Production									
Quantity of words in Spanish		24.5	(16.9)	24.2	(8.4)	50.1	(27.7)	53.2	(28.9)
Quality		8.5	(4.5)	817	(8.2)	11.8	(3.4)	11.4	(3.5)
Description	7	2.4	(1.1)	2.0	(8.9)	3.1	(1.3)	2.6	(1.3)
Bilingual Syntax Measure-Spanish		3.2	(1.7)	3.5	(1.2)	3.8	(0.9)	3.8	(0.6)
Bilingual Syntax Measure-English		1.1	(1.5)	2.1	(1.0)	1.2	(1.4)	0.7	(1.3)

Laredo, Texas

Forty-three experimental children were identified as preferring Spanish, while two were identified as preferring English. Of the control group 40 were Spanish-preferred while 4 were identified as preferring English. On the basis of the language identification results, the groups were not significantly different in their composition.

Forty-four of the Head Start children were Mexican American, and 1 child was identified as Anglo. Forty-one of the control children were Mexican American, 2 were Anglo, and 1 was black.

More than half of the experimental group were males (57 percent), while for the control group, 42 percent were male. The average age for Head Start and control children was 4.3 years. One child in the control group was reported as having previous Head Start experience. No significant differences were observed between experimental and control group children in terms of age, sex, or language preference.

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento).

Listen to the Story and Escuchen Este Cuento were administered to all children in the sample. Experimental children identified as preferring English answered correctly 57 percent of the items on Escuchen Este Cuento, while the controls answered 58 percent of the items correctly.

Children's language comprehension in the study was assessed in their preferred and nonpreferred language. Examining the means and standard deviations in Table 7a for both experimental and control groups indicates that children in these groups performed similarly in language comprehension in their first language.

Listen to the Story proved to be a difficult test when given to English-preferring children in English; they answered only 50 percent of the items correctly. Escuchen Este Cuento was found to be a moderately difficult test for children taking it in Spanish as their first language; they answered 60 percent of the items correctly.

Also, a review of the means and standard deviations on Table 7b indicated that children's performance on language comprehension measures was similar in their first and second language.

2. Language Production. The use of the tests Dimelo Tu and You Say It to assess language production was limited to the child's preferred language. Part II was difficult for children in the English-preferring experimental and control groups, with both groups answering only from 25 percent to 50 percent of the items correctly. Children in the experimental and control groups preferring Spanish also found Dimelo Tu difficult, with both groups answering only one-third of the items correctly. In Part III children preferring English generated fewer words to the You Say It test (experimental, 16; control, 32) than children preferring Spanish (experimental, 50.1; control, 53.2).

In the series of follow-up questions, children in the English-preferred groups gave answers that fit from 5.0 to 8.5 of the 20 possible categories, while children in the Spanish-preferred group generated words that fit into 11 of the 20 word categories. None of these children achieved the maximum possible score, thereby providing ample room for change in child behaviors expected at the posttest.

3. Language Acquisition (Bilingual Syntax Measure, BSM). English-preferring children in the two experimental groups and the four control groups scored similarly on the BSM in both first and second languages. The English-preferred experimental group children registered an average mean length of utterance (MLU) of $\overline{X} = 3.58$, and the English-preferred control group children an MLU of $\overline{X} = 2.44$ when the BSM was administered in the children's identified first language.

In Spanish, the English-preferred experimental group children had an MLU of $\overline{X}$ = 2.61 and the English-preferred control group children an MLU of $\overline{X}$ = 3.21. These results suggest that the English-preferring children of both groups may have been approaching bilingualism, with the experimental group evidencing stronger language acquisition in English relative to Spanish, whereas the English-preferring children of the control group evidenced stronger language acquisition in their second language, Spanish, relative to their identified first language, English.

Results of the BSM administered to the 43 Spanish-preferred children of the experimental group and the 40 Spanish-preferred children of the control group who were testable indicated the groups were similar in first and second language acquisition. The Spanish-preferred experimental group scored an MLU of $\overline{X}$ = 3.85 and the Spanish-preferred control group scored an MLU of $\overline{X}$ = 3.77 when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X}$ = 1.18, and the Spanish-preferred control group an MLU of $\overline{X}$ = .72. Overall, these results show stronger abilities in Spanish than in English for both Spanish-preferring groups, with the experimental group children exhibiting slightly stronger abilities in second language acquisition than the control group children.

4. Concept Development (PSI). Concept development was assessed in English and Spanish by using English and Spanish versions of the PSI (26 items). The number of English-preferring children in the experimental and control groups was small (n = 2 for the experimental group and n = 4 for the control group). Therefore, statistical tests were not used to establish comparability. A review of the means and standard deviations presented in Table 7b indicates that performance of experimental and control groups was comparable for Spanish-preferred children taking the PSI in their first and second language. Spanish-speaking children found the English PSI to be more difficult than the Spanish PSI, as indicated by the percentage of correct responses, 64 percent and 21 percent, respectively, for the two versions.

None of the groups obtained near-maximum scores in either the Spanish or English versions of the PSI, thereby providing room for measuring increases in performance on the posttest.

5. Perceptual Motor Assessment (PMA). Children in the experimental and control groups preferring Spanish answered at least 3 of the 4 items on the English perceptual motor skills subtest, whereas Spanish-preferred children taking the perceptual motor skills test in English found it to be difficult (experimental, 2.6; control, 2.0). Since Spanish-preferred children answered almost all of the items correctly on the Spanish perceptual motor skills subtest, gains in perceptual motor skills may not be detected for these children at posttest when perceptual motor skills are assessed in their first language.

6. Socioemotional Development. A review of the mean ratings for experimental and control groups indicates that children in this sample were comparable in their socioemotional development. Further multivariate t-test (Hotteling's T^2) revealed no significant difference between Head Start and control groups.

Summary of Pretest Results for the Amanecer Model

In summary, owing to differences in the language composition of the Amanecer sites, the child test battery data were analyzed separately for each site. Comparability was established between English-speaking experimental and control groups at Corpus Christi and Spanish-speaking groups at the Laredo site. No statistical comparisons were possible for either the Spanish-speaking children at Corpus Christi or the English-speaking children at Laredo. For the English speakers at Corpus Christi and the Spanish speakers at Laredo, comparability between experimental and control groups was found on all dependent measures.

NUEVAS FRONTERAS MODEL

Rio Grande, Texas

Of the 75 children who made up the sample in Rio Grande City, 37 were randomly assigned to the experimental group and subsequently divided among three classrooms at the Head Start Center. The remaining 38 children were randomly assigned to the control group and attended another Head Start Center of two classrooms.

Thirty-five of the experimental children were identified as preferring Spanish and only 2 spoke English as their first language. Of the control children, 36 were Spanish speakers and two preferred English. The ethnic composition of the experimental and control groups was 100 percent and 97 percent Mexican American, respectively. One black child in the control group accounts for the remaining 3 percent.

Distributed among the classrooms were 10 experimental and 7 control children who had preschool experience. The average age for each group was 4.5 years, and the sexual composition of the two groups was 43 percent male (experimental) and 52 percent male (control). No significant differences were noted in any of these characteristics (language compostion, previous preschool experience, age, or sexual composition) in either group (see Table 8).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). When given the language comprehension measure (Listen to the Story) in their first language, each of the English-speaking groups received a mean score of 40 percent and they registered a 50 percent mean score when they took the test in their second language. These percentages suggest that for this measure the English-preferred children in Rio Grande have some ability in both languages.

The Spanish-preferred groups scored a mean of 44.6 percent (experimental) and 45.3 percent (control) when they were measured in their first language and 36.6 percent and 33.3 percent, respectively, when the test was administered in English.

As can be noted by examining the means and standard deviations in Tables 9a and 9b, the language comprehension measure was a difficult test for children of both groups in both languages; none of the children achieved more than half the maximum possible score, thereby leaving ample space for measuring growth at the time of the posttest.

2. Language Production (Dimelo Tu and You Say It). Part II, administered in the children's first language only, proved to be moderately difficult. The English-preferred children in the experimental group answered 57 percent of the items correctly and those of the control group answered 43 percent correctly. Spanish-preferred children in the experimental and control groups answered 45 percent and 38 percent, respectively.

The Part III narration elicited 64.5 and 33.0 words from the English-preferred experimental and control groups, respectively, but the apparent differences were due to the small number of English-speaking children in the sample. The children whose first language was Spanish generated a mean of 29.5 words from the experimental group and a mean of 26.4 words from the control group.

In the series of follow-up questions, the English-speaking children's answers represented 10.5 (control) to 12.0 (experimental) of the possible 20 categories, and those identified as Spanish-preferred obtained from 8.0 (control) to 8.7 (experimental) of the total possible.

For the English speakers, the number of children in both groups (2 in each) made the use of statistical tests to establish comparability or significant differences unfeasible. There were no significant differences revealed between the Spanish-speaking experimental and control groups on the language production measures.

3. Language Acquisition (Bilingual Syntax Measure, BSM). The 2 experimental group English-preferred children registered a mean length of utterance (MLU) of $\overline{X} = 3.35$, and the 1 control group child registered an MLU of $\overline{X} = 2.90$. In Spanish, the English-preferred experimental group children failed to respond, and hence no MLU score was recorded; the one control group child scored an MLU of $\overline{X} = 2.65$. The results suggest that the two groups were similar in their English-language acquisition and only the single child in the control group had any second language ability in Spanish.

Results of the BSM scored for 36 Spanish-preferred children of the experimental group and 36 Spanish-preferred children of the control group were similar in first and second language acquisition. The Spanish-preferred experimental group had an MLU of $\overline{X} = 3.56$ and the Spanish-preferred control group scored an MLU of $\overline{X} = 3.35$ when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X} = .13$ and the Spanish-preferred control group scored an MLU of $\overline{X} = .34$. Overall, these results suggest little ability in English for either Spanish-preferring groups.

4. Concept Development (Preschool Inventory, PSI). The results of this test, given in both the child's first and second languages, indicate that the children performed better when concept development was measured in their first language. The English speakers scored a mean of 86.5 percent (experimental) and 75 percent (control) in their first language and 65.4 percent and 55.8 percent, respectively, when they took the inventory in Spanish. The Spanish speakers from the experimental group answered a mean of 68 percent items correctly on the Spanish PSI, while their counterparts in the control group scored

58.5 percent. Their scores were considerably lower when they took the PSI in English; the experimental and the control children obtained a mean score of 10.4 percent.

5. Perceptual Motor Assessment (PMA). This subtest of the PSI elicited a score of 2.0 from the English-speaking experimental and control groups when administered in English, and the means ranged from 4.0 (experimental) to 2.0 (control) when administered in Spanish. The Spanish-preferred group of experimentals answered 1.9 of the 4 items on the Spanish PMA and the controls answered 1.8. Their scores for the subtest in their second language were .4 for the experimentals and .2 for the controls. Although the 2 English-preferred children scored 4.0 correct, or 100 percent, on the subtest in Spanish, they did exhibit room for growth in their first language. The scores obtained by the rest of the children indicate the test was difficult and that gains in perceptual motor skills may be detected for these children at the time of the posttest (especially in their second language).

6. Socioemotional Development. A review of these ratings reveals that the children in this sample were comparable in their socioemotional development; there is room for behavioral changes which will be measured at the posttest.

Corona, California

Of the 80 children tested at the Corona site, 39 were assigned to the bilingual Head Start experimental group and attended three classes at the Corona Head Start site. The 41 remaining control children attended a nearby Head Start Center.

Twenty-six of the experimental children were classified as preferring English and 13 as preferring Spanish. The control group had 23 English speakers and 18 children who spoke Spanish as their first language. The ethnic breakdown of the two groups was as follows. In the experimental group there were 29 Mexican Americans, 9 Anglos, and 1 black. In the control group there were 30 Mexican Americans, 7 blacks, 3 Anglos, and 1 American Indian.

In the entire sample, only 5 children (experimental) had had previous preschool experience, and the average ages of the children at the time of testing was 4.3 years (experimental) and 4.2 years (control). Fifty-nine percent of the experimental children were males, while the control group had 51 percent males. No significant differences were observed between the two groups in any of the background characteristics (age, sex, ethnicity, or language composition) (see Table 8).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). The mean scores obtained by the English-speaking experimental and control groups on the language comprehension measure given in their preferred language (Listen to the Story) were 49 percent and 60 percent, respectively. When the same measure was given in their second language (Escuchen Este Cuento), each group registered a mean score of 50 percent.

The Spanish-preferred children from the experimental group scored 45 percent on Escuchen Este Cuento, while those of the control obtained 46 percent. Taking the Listen to the Story test in their second language, they received mean scores of 38 percent (experimental) and 24 percent (control).

As can be noted by examining the means and standard deviations on Tables 9a and 9b, the language comprehension measures were moderately difficult for both groups in their preferred language and very difficult for both groups in their second language. None of the children achieved the maximum score, allowing ample room for behavioral changes or growth by the time of posttest.

2. Language Production (Dimelo Tu and You Say It). The English-preferred children obtained a mean score of 41 percent (experimental) and 47 percent (control) on the descriptive section (Part IIa) of You Say It. Their mean language

Table 8

Background Characteristics of the Children for Nuevas Fronteras Head Start Sites

	Corona		Rio Grande	
	Experimental	Control	Experimental	Control
Age				
(Means in Months)	51.8	50.2	54.1	53.6
Sex				
Boys	23	21	16	20
Girls	16	20	21	18
Language Preference				
Spanish	13	18	35	36
English	26	23	2	2
Previous Preschool Experience				
Yes	4	0	10	7
No	35	41	27	31
Ethnicity				
Anglo	9	3	0	0
Black	1	7	0	1
Mexican American	29	30	37	37
Other	0	1	0	0

Table 9a

Results of Pretest in the Child Assessment Instruments for the Nuevas Fronteras Model for the English-Preferred Children

MEASURES	NUMBER OF ITEMS	Rio Grande (N=4)				Corona (N=49)			
		EXPERIMENTAL (n=2)		CONTROL (n=2)		EXPERIMENTAL (n=26)		CONTROL (n=23)	
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Language Check	16	15.0	(0.0)	14.5	(2.1)	14.7	(0.9)	14.4	(1.6)
Socioemotional	25	21.5	(0.7)	17.0	(4.2)	17.9	(3.1)	17.5	(2.9)
Preschool Inventory									
Preschool Inventory-Spanish	26	22.5	(2.1)	19.5	(2.1)	19.8	(5.6)	19.7	(3.9)
Preschool Inventory-English	26	17.0	(2.8)	14.5	(3.5)	0.8	(2.5)	1.9	(5.0)
Perceptual Motor									
Spanish	4	2.0	(0.0)	2.0	(0.0)	1.7	(0.6)	1.9	(0.2)
English	4	3.0	(2.0)	2.0	(0.0)	0.0	(0.0)	0.3	(0.7)
Language Comprehension									
Escuchen Este Cuento	15	6.0	(1.4)	6.0	(1.4)	7.3	(2.5)	9.0	(2.5)
Listen to the Story	15	7.5	(0.7)	7.5	(4.9)	7.5	(0.7)	7.5	(4.9)
Language Production									
Quantity of words in Spanish		64.5	(3.5)	33.0	(18.4)	44.5	(5.3)	62.5	(39.9)
Quality		12.0	(1.4)	10.5	(0.7)	9.3	(3.7)	10.7	(2.9)
Description	7	4.0	(0.0)	3.0	(0.0)	2.9	(1.3)	3.3	(1.2)
Bilingual Syntax Measure-English		3.6	(0.7)	3.6	(0.7)	3.8	(0.9)	3.8	(0.6)
Bilingual Syntax Measure-Spanish		0.1	(0.6)	0.3	(1.1)	1.5	(2.0)	0.6	(1.3)

Table 9b

Results of Pretest in the Child Assessment Instruments for the Nuevas Fronteras Model for the Spanish-Preferred Children

MEASURES	NUMBER OF ITEMS	Rio Grande (N=71)				Corona (=31)			
		EXPERIMENTAL (n=35)		CONTROL (n=36)		EXPERIMENTAL (n=13)		CONTROL (n=18)	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Check	16 1	12.3	(2.1)	12.0	(2.1)	13.6	(1.6)	12.7	(2.3)
Socioemotional	25	16.7	(2.8)	15.9	(3.4)	19.2	(1.5)	18.0	(3.1)
Preschool Inventory									
Preschool Inventory-Spanish	26	2.7	(4.4)	2.0	(4.4)	7.6	(9.3)	1.5	(3.7)
Preschool Inventory-English	26	17.7	(4.5)	15.2	(5.1)	16.0	(3.5)	15.6	(4.1)
Perceptual Motor									
Spanish	4	0.4	(0.8)	0.2	(0.7)	0.6	(0.9)	0.1	(0.4)
English	4	1.9	(0.3)	1.8	(0.4)	1.8	(0.5)	1.9	(0.2)
Language Comprehension									
Escuchen Este Cuento	15	5.5	(1.5)	5.0	(1.7)	5.7	(2.9)	3.6	(2.9)
Listen to the Story	15	6.7	(2.2)	6.8	(2.0)	6.7	(2.3)	6.9	(2.0)
Language Production									
Quantity of words in Spanish		29.5	(2.0)	26.4	(21.3)	48.0	(22.8)	51.1	(30.5)
Quality		8.7	(3.5)	8.0	(4.2)	11.0	(2.2)	10.4	(3.7)
Description	7	2.7	(1.1)	2.3	(1.3)	2.7	(1.5)	1.9	(1.2)
Bilingual Syntax Measure-Spanish		3.4	(0.5)	2.9	(0.0)	3.3	(0.8)	3.4	(0.9)
Bilingual Syntax Measure-English		0.0	(0.0)	2,7	(0.0)	0.0	(0.0)	0.0	(0.0)

score on the narration was 44.5 words for the experimentals and 62.5 words for the controls. In the follow-up questions used to elicit the quality of the response, among the children who spoke English as their first language, the experimental group's answers averaged 46 percent of the 20 possible categories, while those of the control group averaged 53 percent.

The Spanish-preferred children obtained a mean score of 45 percent (experimental) and 32 percent (control) on the descriptive part of Dimelo Tu. The narration evoked a mean of 48.0 words with a standard deviation of 22.8 among the experimentals and a mean of 51.5 words with a standard deviation of 30.5 for the control children. These children's (Spanish) answers averaged 55 percent (experimental) and 52 percent (control).

Part II of the language production proved moderately difficult for both groups in both languages and none of the children received the maximum possible score. Although the means of different words produced by both groups in both languages are comparable, the standard deviations suggest heterogeneity within the groups. Both groups of children (experimental and control) performed similarly on the follow-up questions.

3. Language Acquisition (Bilingual Syntax Measure, BSM). Among the English-preferred children, the 25 experimental group children and the 23 control group children responding to the BSM scored similarly in both first and second languages. The English-preferred experimental group registered a mean length of utterance (MLU) of $\overline{X}$ = 3.31, and the English-preferred control group an MLU of $\overline{X}$ - 3.45 when the BSM was administered in the children's first language. In Spanish, none of the English-preferred children from either group were able to respond; hence no MLU scores were registered. These results suggest that the English-preferring children of both experimental and control groups evidenced some degree of English language acquisition but no Spanish language acquisition.

Results of the BSM administered to the 14 Spanish-preferred children of the experimental group and the 17 Spanish-preferred children of the control group who were testable indicated similar first and second language acquisition. The Spanish-preferred experimental group scored an MLU of $\overline{X} = 3.61$ and the Spanish-preferred control group an MLU of $\overline{X} = 3.95$ when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X} = 1.52$ and the Spanish-preferred control group an MLU of $\overline{X} = .58$. No significant differences were found between the groups on either language.

4. Concept Development (Preschool Inventory, PSI). When the English-preferred children took this measure in their dominant language, they obtained a mean score of 76 percent for each group, while their mean score for the Spanish PSI was 3 percent (experimental) and 7 percent (control). The Spanish-preferring groups registered a mean score of 62 percent from the experimentals and 60 percent correct from the controls when they took the inventory in their first language, but only 29 percent and 6 percent, respectively, when they were administered the test in English, their second language.

As noted on Tables 9a and 9b, both language groups did considerably better on the PSI when they took it in their preferred language. No child scored the maximum number possible, which allows sufficient room for growth and change in behavior by the posttest.

5. Perceptual Motor Assessment (PMA). The mean scores on the 4-item subtest when given in the first language to English-preferred children ranged from 1.7 (experimental) to 1.9 (controlled). The same groups scored 0.0 (experimental) to 0.3 (controlled) when the subtest was given in Spanish. The children identified as Spanish speaking obtained a mean of 1.8 for the experimentals and 1.9 for the controls on the assessment in Spanish and 0.6 and 0.1, respectively, when given the subtest in English. The scores show this test was difficult for both groups in both languages, and no child achieved the maximum number possible.

6. Socioemotional Development. The observational ratings given by the testers to the English-speaking experimental group was 17.9 mean composite, while the controls scored a mean composite of 17.5. The Spanish-preferred children from the experimental and control groups received mean composites of 19.2 and 18.0, respectively. No significant differences were found between groups in either language.

Summary of the Pretest Results for the Nuevas Fronteras Model

An examination of the background characteristics of the children in the sample at the Nuevas Fronteras sites revealed that differences existed between samples at the the two sites in their language composition. Only 4 of the 75 children at Rio Grande were identified as English preferring, while 31 of the 80 children at Corona were so identified.

The results of the MANOVA (multivariate analysis of variance) indicated no significant differences between experimental and control groups on first or second language cognitive measures at the Rio Grande site (see Table 5). Owing to the small number of children speaking English at the Rio Grande site, no statistical comparisons were made between English-speaking children in the experimental and control groups. A univariate t-test revealed no significant differences between English- or Spanish-speaking children in either first or second syntactical language development or in their socioemotional development.

At Corona the MANOVA results indicated that children in the experimental and control groups were comparable in their test performance on cognitive measures in both their first and second language. However, the MANOVA revealed differences between Spanish-speakers in the experimental and control groups in their second language (Listen to the Story and Concept Development). The results of a univariate t-test indicated that the English and Spanish speakers in the experimental and control groups were equivalent in their socioemotional development.

In summary, the results of the pretest data established comparability between experimental and control children at the Rio Grande site. At the Corona site the results of the analysis indicated that the experimental and control groups were not comparable in their test performance on second language cognitive measures. The latter finding is not surprising given the manner in which the experimental and control groups were formed at this site.

UN MARCO ABIERTO MODEL

Milwaukee, Wisconsin

The sample in Milwaukee consisted of 72 children. Forty-two children were enrolled in the experimental group and attended three classes at the experimental Head Start Center. The control group was made up of 10 children who were not attending classes at any Head Start Center and 20 children who were taking part in the Head Start Home Base program.

Nineteen of the experimental group children were identified as preferring Spanish and 23 as preferring English as their first language. Of the controls, 25 were Spanish-preferred and only 5 spoke English as their first language. None of the children had had any previous preschool experience.

The ethnic division of the experimental group was 29 Mexican Americans, 7 Puerto Ricans, and 6 Anglos; the control group claimed 18 Mexican Americans, 11 Puerto Ricans, and 1 Anglo. Sixty percent of the experimental children were males as were 37 percent of the control children. The mean ages for the two groups at the time of testing were 4.2 years (experimental) and 4.1 years (control) (see Table 10).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). This measure, when given to the English-speaking group in their first language, elicited a mean score of 41 percent correct responses from the experimentals and 44 percent from the controls. When these two groups took the measure in Spanish, they obtained a mean score of 30 percent (experimental) and 39 percent (control). The Spanish-preferred experimental group registered a mean score of 40 percent as compared to 41 percent for the control group when both groups were given Escuchen Este Cuento. Their scores from Listen to the Story were 29 percent and 34 percent, respectively.

2. Language Production (Dimelo tu and You Say It).

Part II (description) was difficult for all groups in Milwaukee. None of the groups answered more than 50 percent of the items correctly. The mean scores for the English-speaking children were 43 percent and 49 percent for the experimental and control groups, respectively, and, for the Spanish-preferred, 33 percent (experimental) and 38 percent (control). The experimental children with English as their first language generated a mean of 40.7 words with a standard deviation of 19.6, while their peers in the control group produced a mean of 69.6 words with a standard deviation of 40.9. The Spanish-preferred children in the experimental group averaged 45.0 words with a standard deviation of 27.2, while the controls produced a mean of 41.8 words with a standard deviation of 20.7.

Of the 20 categories possible in the series of follow-up questions, the English speakers' responses fit 10.5 categories, and Spanish speakers' responses fit 10.5 (experimental) and 12 (control) categories.

3. Language Acquisition (Bilingual Syntax Measure, BSM). Of the English-preferred children who were testable, the 15 experimental group children and the 13 control group children scored similarly on the BSM in both

Table 10

Background Characteristics of the Children for Un Marco Abierto Head Start Sites

	Milwaukee		East Los Angeles	
	Experimental	Control	Experimental	Control
Age				
(Means in Months)	50.3	49.5	52.6	51.0
Sex				
Boys	25	11	17	21
Girls	17	19	23	19
Language Preference				
Spanish	19	25	25	26
English	23	5	15	14
Previous Preschool Experience				
Yes	0	0	0	0
No	42	30	40	40
Ethnicity				
	6	1	0	0
Black	0	0	1	0
Mexican American	29	18	38	40
Puerto Rican	7	11	0	0
Other	0	0	1	0

Table 11a

Results of Pretest in the Child Assessment Instruments for the Marco Abierto Model for the English-Preferred Children

MEASURES	NUMBER OF ITEMS	Milwaukee (N=28)				East Los Angeles (N=29)			
		EXPERIMENTAL (n=23)		CONTROL (n=5)		EXPERIMENTAL (n=15)		CONTROL (n=14)	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Check	16	14.5	(1.3)	14.8	(1.3)	11.9	(3.7)	13.4	(1.6)
Socioemotional	25	16.2	(2.3)	15.8	(3.3)	16.9	(4.3)	18.2	(3.0)
Preschool Inventory									
Preschool Inventory-Spanish	26	15.4	(4.7)	16.4	(5.3)	12.2	(6.2)	15.3	(3.6)
Preschool Inventory-English	26	3.1	(5.6)	3.8	(5.0)	0.8	(2.3)	1.6	(3.5)
Perceptual Motor									
Spanish	4	3.4	(0.9)	3.8	(0.4)	2.8	(1.6)	3.3	(0.7)
English	4	0.7	(1.3)	1.2	(1.8)	0.1	(0.5)	0.4	(1.1)
Language Comprehension									
Escuchen Este Cuento	15	7.0	(2.2)	6.6	(1.5)	5.9	(2.5)	6.8	(1.6)
Listen to the Story	15	4.6	(3.3)	5.8	(1.1)	1.3	(2.3)	3.1	(3.7)
Language Production									
Quantity of words in Spanish		40.7	(19.6)	69.6	(40.9)	61.5	(46.6)	6.2	(31.2)
Quality		10.3	(2.6)	12.6	(3.6)	10.4	(4.1)	13.4	(1.8)
Description	7	3.0	(1.2)	3.4	(1.1)	2.9	(1.4)	3.1	(1.0)
Bilingual Syntax Measure-English		3.3	(0.8)	3.8	(1.2)	3.0	(1.2)	3.5	(0.7)
Bilingual Syntax Measure-Spanish		0.3	(1.0)	1.4	(1.9)	0.0	(0.0)	0.2	(0.7)

Table 11b

Results of Pretest in the Child Assessment Instruments for the Un Marco Abierto Model for the Spanish-Preferred Children

		Milwaukee (N=44)				East Los Angeles (N=51)			
MEASURES	NUMBER OF ITEMS	EXPERIMENTAL (n=19)		CONTROL (n=25)		EXPERIMENTAL (n=25)		CONTROL (n=26)	
		X̄	(SD)	X̄	(SD)	X̄	(SD)	X̄	(SD)
Language Check	16	13.2	(2.2)	12.7	(1.9)	13.2	(1.7)	13.5	(1.2)
Socioemotional	25	15.7	(2.5)	16.6	(2.6)	17.6	(3.6)	17.9	(2.4)
Preschool Inventory									
Preschool Inventory-Spanish	26	12.1	(4.2)	10.7	(4.0)	11.4	(4.8)	11.9	(4.2)
Preschool Inventory-English	26	5.8	(6.4)	4.0	(5.9)	2.6	(3.7)	2.8	(4.0)
Perceptual Motor									
Spanish	4	3.9	(0.3)	3.5	(0.8)	3.4	(1.1)	3.7	(0.9)
English	4	1.6	(1.8)	1.2	(1.6)	0.5	(1.1)	0.7	(1.3)
Language Comprehension									
Escuchen Este Cuento	15	5.0	(2.0)	6.1	(2.5)	7.4	(1.4)	6.8	(2.4)
Listen to the Story	15	4.3	(2.3)	5.1	(2.6)	4.0	(4.3)	4.5	(3.8)
Language Production									
Quantity of words in Spanish		45.0	(27.2)	41.8	(20.7)	63.0	(55.2)	48.3	(36.6)
Quality		10.2	(3.7)	10.3	(3.2)	11.2	(4.7)	10.8	(4.2)
Description	7	2.0	(1.2)	2.3	(1.5)	2.0	(1.3)	2.7	(1.3)
Bilingual Syntax Measure-Spanish		3.8	(1.0)	3.3	(1.0)	3.5	(0.7)	3.3	(0.8)
Bilingual Syntax Measure-English		1.1	(1.4)	0.9	(1.4)	0.1	(0.6)	0.3	(1.1)

first and second languages. The English-preferred experimental group children produced a mean length of utterance (MLU) of $\overline{X} = 2.98$, and the English-preferred control group children registered an MLU of $\overline{X} = 3.47$ when the BSM was administered in the children's first language. In Spanish, none of the English-preferred children from the experimental group were able to respond; hence no MLU scores were registered. The control group children preferring English registered an MLU of $\overline{X} = .20$ when the BSM was administered in Spanish. These results suggest that the English-preferring children of both groups evidenced some degree of English language acquisition but little or no Spanish language acquisition.

Results of the BSM administered to 25 Spanish-preferred children of the experimental group and 26 Spanish-preferred children of the control group were similar in first and second language acquisition. The Spanish-preferred experimental group scored an MLU of $\overline{X} = 3.63$, and the Spanish-preferred control group an MLU of $\overline{X} = 3.37$ when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X} = .75$, and the Spanish-preferred control group children an MLU of $\overline{X} = .71$. No significant differences were found between the two groups.

4. Concept Development (Preschool Inventory, PSI). The group mean scores were consistently higher when concept development was tested in the first language. The English-preferred groups obtained means of 59 percent (experimental) and 63 percent (control) correct responses on the PSI in English, but only averaged 12 percent (experimental) and 15 percent (control) on the PSI in Spanish. The Spanish-preferred children obtained a mean score of 47 percent (experimental) and 41 percent (control) when the PSI was administered to them in Spanish and 22 percent (experimental) and 15 percent (control) when they took the test in English. As can be noted by examining Tables 11a and 11b, the mean scores of both groups (experimental and control) indicate no apparent differences in either language.

5. Perceptual Motor Assessment (PMA). This subtest of the PSI offers a maximum score of 4.0 points. Both groups had little difficulty when they took the test in their first language. The English speakers from the experimental and control groups scored means of 3.9 and 3.4, respectively, and experimental and control Spanish speakers scored means of 3.9 and 3.5, respectively. Scores from the subtest, when given in the second language to English-speaking experimentals, was 0.7 and to English-speaking controls, 1.2. On the English subtest, Spanish-preferred experimentals and controls scored means of 1.6 and 1.2, in that order.

Since the preferred language scores approached the possible ceiling, gains in perceptual motor skills may not be detected for the children at posttest when these skills are assessed in the children's first language. However, gains in perceptual motor skills can be detected in the second language.

6. Socioemotional Development. Children who preferred English received a mean composite socioemotional rating of 16.2 for the experimental group and 15.8 for the control group. The Spanish speakers were rated similarly, with mean composite scores of 15.7 (experimental) and 16.8 (control). These groups (experimental and control) appear to be comparable in their socioemotional development.

East Los Angeles, California

This site had 80 children in the sample who were divided in equal numbers between an experimental group attending three classes at the experimental Head Start Center and a control group attending a nearby Head Start Center.

The language composition of the experimental group was made up of 15 English-preferring and 25 Spanish-preferring children. The control group consisted of 14 English-preferred children and 26 Spanish-preferred. Mexican American children comprised 100 percent of the control group and 95 percent of the experimental group. The 2 non-Hispanic children in the experimental group were 1 black and 1 Vietnamese child. None of the children had had previous preschool experience. Forty-two percent of the experimentals were males as opposed to 52 percent of the control group. The data reveal no significant differences in the previous characteristics (language preference, sex, age, or previous preschool experience).

1. Language Comprehension (Listen to the Story - Escuchen Este Cuento). This measure of language comprehension, administered in both languages to each group, proved difficult as no group scored more than a mean of 50 percent correct responses. The English-preferred groups obtained a mean score of 39 percent for the experimental and 45 percent for the control group when taking Listen to the Story versus 9 percent (experimental) and 21 percent (control) when they were tested in their second language (Escuchen Este Cuento). The Spanish-speaking children in experimental and control groups registered a mean score of 49 percent and 45 percent, respectively, on Escuchen Este Cuento and 27 percent and 30 percent, respectively, on Listen to the Story. A review of the means and standard deviations on Table 11b indicates that the two groups (experimental and control) were comparable. The low scores leave sufficient space to measure change in child behavior at posttest.

2. Language Production (Dimelo Tu and You Say It). Section IIb of the language production measure (given only in the child's first language) was a difficult test as indicated by the following mean scores of correct responses: English, 41 percent (experimental) and 44 percent (control); and Spanish, 33 percent (experimental) and 45 percent (control). The English-preferred experimental group's performance on the Part III narrative of You Say It yielded a mean of 61.5 words, while the control group generated a mean 56.2 words. The experimental children who spoke Spanish as their first language produced a mean 63.0 words on Dimelo Tu, whereas the controls produced a mean 48.3 words.

In the series of follow-up questions the English-preferred children's answers represented a mean 10.4 (experimental) and 13.4 (control) of the maximum 20 possible categories. The experimental Spanish speakers' answers applied to a mean 11.2 categories, and the control groups' answers to 10.8 categories. These measures of language production, as seen in Tables 11a and 11b demonstrate comparability between the experimental and control groups. It would appear, however, that much diversity exists between children's language production within groups judging from the standard deviations on the narratives.

Section IIa and the follow-up questions appear moderately difficult to very difficult for the children. No child approached the maximum score in either language, leaving adequate space for growth measurement at the time of the posttest.

3. Language Acquisition (Bilingual Syntax Measure, BSM). Among the English-preferred children who were testable, the 23 experimental group children and the 5 control group children scored similarly on the BSM in English and somewhat differently on the BSM in Spanish. The English-preferred experimental group children registered a mean length of utterance (MLU) of $\overline{X} = 3.27$, and the English-preferred control group children an MLU of $\overline{X} = 3.86$ when the BSM was administered in the children's first language. In Spanish, the English-preferred experimental group children registered an MLU of $\overline{X} = .31$, and the English preferred control group children an MLU of $\overline{X} = 1.39$. These results suggest that the English-preferring children of both groups evidenced stronger English language aquisition levels relative to Spanish, with the control group recording somewhat higher second language acquisition scores.

Results of the BSM showed the 19 Spanish-preferred children of the experimental group and the 25 Spanish-preferred children of the control group to be similar in first and second language acquisition. The Spanish-preferred experimental group scored an MLU of $\overline{X} = 3.79$, and the Spanish-preferred control group obtained an average MLU of $\overline{X}$ 3.31 when the BSM was administered in Spanish. In English, the Spanish-preferred experimental group children scored an MLU of $\overline{X} = 1.08$, and the Spanish-preferred control group children an MLU of $\overline{X} = .88$. No significant differences were found between the two groups in terms of language acquisition.

4. Concept Development (Preschool Inventory, PSI). The mean scores of the PSI given in both languages indicate that the children performed consistently better when they took the test in their dominant language (see Table 11a). When administered the PSI in English, the English speakers in the experimental and control groups scored a mean of 47 percent and 59 percent correct responses, respectively, but when they took the PSI they registered 3 percent and 6 percent, respectively. The Spanish speakers obtained a mean score of 44 percent (experimental) and 46 percent (control) when given the inventory in their first language, while the PSI in English elicited a mean score of 10 percent for the experimental group and 11 percent for the control group.

5. Perceptual Motor Assessment (PMA). As can be expected from the results of the PSI, the children performed much better on this assessment when they took it in their preferred language. The mean scores for the English speakers were 2.8 for the experimental group and 3.3 for the control group on the English subtest and 0.1 and 0.4, respectively, on the Spanish subtest. The Spanish subtest elicited a mean score of 3.4 from the Spanish-speaking experimentals and 3.7 from the controls. When the same children took the measure in their second language, they scored 0.5 and 0.7, respectively.

6. Socioemotional Development. Based on a maximum score of 25, the English speakers achieved mean composite ratings of 16.9 (experimental) and 18.2 (control). The Spanish-preferred experimental and control groups received mean composite scores of 16.9 and 17.9 in that order. The ratings indicate these children were comparable in their socioemotional development regardless of group or language and that there existed room for growth or change in child behaviors by the time of posttest.

Summary of Pretest Results for the Marco Abierto Model

The findings of the multivariate t-test (Hotelling's T^2) show no significant differences exist between the groups of children at Milwaukee or East Los Angeles, regardless of their preferred languages, in any of the 5 tests in the test battery or in their background characteristics. Tests of significance were not performed for the English-speaking children in Milwaukee because of the size of sample, 5 in the control and 23 in the experimental.

Statistically significant differences were noted between experimental and control children across both sites. This was due primarily to differences in performance on the language comprehension task, in which control children performed higher than experimental children. The results of a set of univariate t-tests conducted for each site individually indicated that no significant differences existed for either language group on the socioemotional rating form.

C. Parent Interview Data

As part of Juarez and Associates multimethod approach to evaluation, parents of both the experimental and control group children at each site were interviewed after testing of the children had taken place. The purpose of these interviews was to provide information about relevant variables in the home environment which may affect the treatment being evaluated, as well as to determine any changes in that environment over time. Thus, although the measures differ, the analysis of the parent interview data and the presentation of results parallel those of the child data. Moreover, when the MANOVA revealed differences between experimental and control groups, chi-square and univariate t-tests were used to localize such differences.

ALERTA MODEL

Lower East Side, New York

Owing to problems in recruitment and randomization at the Lower East Side site discussed earlier, the respondent sample included 19 experimental group and 9 control group respondents. Because of the small and unequal number of respondents at this site, the following discussion of results must be considered tentative.

The majority of respondents interviewed were mothers. The ethnic composition of the two groups was not clear due to a significant amount of missing information from respondents. For example, Table 12 suggests that more blacks were participating in the experimental group than in the control group, but the relative size of the two groups may account for this difference. Both experimental and control groups appeared similar in the average number of years lived in the United States. The experimental group reported an average of 13.4 years in the United States, whereas the control group reported an average of 16.6 years in the United States.

The occupational status of both experimental and control group respondents was also similar, with 74 percent and 89 percent, respectively, reporting "not working." The occupational status of more than half of the second adults in the household, in most instances the father, was not known owing to a lack of information from respondents. The family income level for the experimental group was slightly lower than for the control group, with a higher percentage of experimental group respondents reporting incomes of $5,000 or less. Income differences were not reflected in educational levels, however, as the experimental group respondents completed a higher number of years of schooling on an average than the control group respondents.

The family composition of both groups appeared quite similar. The principal caretaker in most cases was the mother. Approximately four to five people lived in each household with an average of two chidren per family. The average age of the children in the families was between 5 and 6 years.

Experimental group respondents were more likely than control group respondents to report that their children had bilingual bicultural educational program experience.

Language ability and usage is reported in Table 13. When respondents of both groups were asked to estimate their language ability in English and Spanish, no significant differences were noted. On the average, competence in English was judged good and competence in Spanish was seen as fair.

Respondents from experimental and control groups employed both languages in the home but expressed some preference for using English to teach their children such concepts as numbers, colors, and shapes. Experimental group respondents rated their children's language ability as very good in English and fairly good in Spanish. The control group parents indicated that their children had good ability in English but little ability in Spanish.

Respondent aspirations for their children's educational and occupational future is reported in Table 14. In general, the majority of the respondents from both groups desired some type of professional career for their children, with a greater percentage of experimental group respondents indicating that the selection of vocation should be left to the child. When respondents were asked how far they would like to see their children go in school, the experimental group indicated an average of 17.37 years of schooling and the control group an average of 16.0 years. The difference between the experimental group respondents and control group respondents is statistically significant at the .05 level.

Respondent attitudes towards the purpose of school in general, their own education, and their perception of bilingual bicultural education was assessed through ratings of a series of statements. When asked if they felt that their school attendance had benefited them, both sets of respondents rated previous educational experience as favorable. Both experimental and control group respondents also tended to rate education in general and bilingual bicultural education in particular as positive.

South Bronx, New York

A total of 53 respondents, 30 from the experimental group and 23 from the control group, constituted the sample at the South Bronx site. As can be seen from Table 12, the primary respondent for all interviews was the mother and a majority of respondents were characterized as ethnically Hispanic. On the average, experimental group respondents reported having lived slightly longer in the United States (20.7 years) than control group respondents. In most cases the principal caretaker for children from both the experimental and control groups was reported to be the mother.

Most (87 percent) of the respondents reported not being employed at the time of the interview. A majority of the "other" adults present in the household was reported to be the father. This second adult in the control group was more likely to be employed than their counterparts in the experimental group.

Table 12 illustrates family income distribution by percent for both experimental and control group respondents. The income level for a majority of the respondents in the experimental group was reported as $8,000 or less, whereas the control group respondents reported incomes that were more equitably distributed across all income categories. This different income distribution between the two groups accounts for the statistically significant differences in income reported in Table 12. The adults of both groups reported having completed a rewarding education and obtaining similar number of years of formal education.

The family composition of the experimental and control groups can be seen on Table 12. The average number of people in the home for both experimental and control group families was approximately four with most families reporting close to an average of three children. The average ages of the children was 5.6 years in the experimental group and 4.4 years in the control group. Some 36.7 percent of the experimental group families reported that one or more of their children was or had been involved in some type of bilingual bicultural educational program. Except for a few cases, the control group respondents reported that no siblings had been or were currently involved in any bilingual bicultural education programs. A difference between groups in children's exposure to bilingual bicultural education was statistically significant at the .01 level.

Table 13 presents data on respondent, second adult, and child language ability and usage. The respondents were asked to judge their own as well as the second adult's language ability in English and Spanish; English ability was judged as good and Spanish ability as below fair.

Respondents from both groups reported that adults were most likely to use English as the primary language in the home, including its use for teaching their children such things as color, numbers, and shapes. Both sets of respondents

Table 12

Background Characteristics (Alertà)

	SITE: Lower East Side		SITE: South Bronx	
	Experimental (n = 19)*	Control (n = 9)	Experimental (n = 30)	Control (n = 23)
	%**	%	%	%
1. Respondent				
Mother	95	100	80	83
Father	5	0	0	4
Other	0	0	20	13
2. Ethnicity				
Hispanic	63	89	63	70
Anglo	0	0	0	0
Black	26	0	30	30
Other	11	11	7	0
3. Principal Caretaker				
Mother	90	100	80	83
Father	5	0	0	0
Other	5	0	20	17
4. Other Adult				
Mother	0	0	8	15
Father	82	83	69	69
Other	18	17	23	15
5. Occupation of Respondent				
Professional/Manager	11	0	0	0
Clerical/Sales	16	0	3	9
Crafts	0	11	3	0
Skilled/Semiskilled Laborer	0	0	0	4
Service	0	0	7	0
Not working	74	89	87	87
6. Occupation of Other Adult				
Professional/Manager	0	0	3	4
Clerical/Sales	11	11	3	4
Crafts	5	11	10	9
Skilled/Semiskilled Laborer	11	11	0	22
Service	16	0	5	3
No response	58	68	80	57
7. Family Income				
$0-5,000	47	22	46***	39
5,001-8,000	11	33	46	22
8,001-plus	42	44	7	39
8 Education of Adults in Home				
0 to 9 years	30	50	23	31
9 to 12 years	30	50	54	54
13 years plus	40	0	23	15

	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
9. Years in U.S.	13.4	7.8	16.6	7.9	20.7	9.7	17.0	13.1
10. Average Family Size	3.8	1.3	4.6	1.7	4.4	1.5	3.8	1.5
11. Average Number of Children	2.2	1.1	2.2	1.4	2.9	1.5	2.6	2.2
12. Average Age of Children	5.3	2.7	5.7	3.6	5.6	2.3	4.4	1.9

* Total number of respondents within a group; number of respondents to individual items or scales may vary.

** Percentages may not total 100 owing to rounding.

*** Statistically significant difference between experimental and control groups at $P > .05$.

Table 13

Language Ability and Usage (Alerta)

	SITE: Lower East Side				SITE: South Bronx			
	Experimental		Control		Experimental		Control	
	(n = 19)		(n = 9)		(n = 30)		(n = 23)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Ability of Parent								
English	2.51	.86	2.02	1.07	2.30	.80	2.19	1.06
Spanish	1.90	1.01	1.86	.79	1.66	1.15	1.63	1.22
Parental Language Usage with Child	1.87	.60	2.11	.60	1.72	.65	1.93	.60
Language Used to Teach Child	1.60	.58	1.83	.86	1.52	.59	1.72	.96
Child's Language Usage with Others	1.70	.71	1.71	.81	1.52	.59	1.53	.54
Child's Language Ability*								
English	2.58	.63	2.00	1.32	2.47	.75	2.17	.87
Spanish	1.90	1.00	1.33	.87	1.53	1.17	1.91	1.31

* Utilizing a three-point scale, where 1 = English, 2 = both Spanish and English, and 3 = Spanish.

perceived their children's English language ability as better than their children's Spanish language ability. Respondents from both groups also reported that their children were most likely to use English with siblings, friends, and relatives.

Table 14 reports respondent aspirations towards educational and occupational attainment and respondent attitudes toward various aspects of education. In general, respondents from both groups held similarly high aspirations for professional level occupations when asked what kind of job they would like for their children when they grow up. Aspirations for educational attainment is also similar with respondents from both groups expressing a desire for 15 years of formal schooling.

Respondent attitudes toward education in general, toward bilingual bicultural education, and toward their own educational experiences were similar; both sets of individuals were positively inclined toward education and bilingual bicultural education and somewhat less positively inclined toward their own education.

Summary of Parent Data for the Alerta Model

Both sites participating in the Alerta curriculum demonstrated relatively few differences between experimental and control group respondents. Within-site differences included respondent aspirations for children's educational attainment at the Lower East Side site and differences in income and sibling participation in bilingual bicultural education at the South Bronx site. The differences between the groups at both sites may be attributed to differences in the selection and make-up of the two sample populations (see Table 12).

Nevertheless, in general the respondents at the two sites did not appear dissimilar. Both parental samples indicated a tendency to rate themselves higher in English ability than in Spanish ability and a greater propensity to use English

Table 14

Parental Aspirations/Attitudes (Alerta)

	SITE: Lower East Side				SITE: Bronx			
	Experimental (n = 19)*		Control (n = 9)		Experimental (n = 30)		Control (n = 23)	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Attitudes Toward								
Education in General	4.30	.51	4.04	.31	4.23	.40	4.27	.36
Own Education	4.11	1.05	3.63	1.06	3.67	1.12	3.59	.96
Bilingual Bicultural Education	4.00	.58	3.80	.31	4.00	.46	4.00	.35
Educational Aspirations (in years)	17.37	1.00	16.00	1.73	15.70	1.42	15.87	2.12
	%		%		%		%	
Occupational Aspirations								
Professional	57.9		88.9		80.0		87.0	
Clerical	0		11.1		10.0		0	
Skilled/Semiskilled Laborer	0		0		0		0	
Childs Choice	42.1		0		6.7		13.0	
No Response	0		0		3.3		0	

*Number of respondents vary for each subscale.

over Spanish when speaking to their children. Parents also saw their children as better English speakers than Spanish speakers.

There were also no major differences on attitudinal variables between the Lower East Side site and the South Bronx site. Both samples expressed a favorable attitude toward education in general, bilingual bicultural education in particular, and their own personal educational experiences. Both sets of respondents also expressed similar aspirations for their children's educational attainment, with the Lower East Side respondents indicating a slightly higher mean average of desired years of schooling. Aspirations for the children's occupational attainment tended toward the professional level for both groups of respondents.

AMANECER MODEL

Corpus Christi, Texas

There were no statistically significant differences between the Corpus Christi experimental and control respondents on any variable.

The sample at Corpus Christi was composed of 36 experimental and 30 control respondents, with 91 percent of the respondents in the two groups identifying themselves as the mothers of the children. As can be seen in Table 15, the two groups were generally comparable in background characteristics. Ethnically, for example, almost 94 percent, or 62 of the 66 respondents, were identified as Hispanics. The two groups had each spent relatively long amounts of time in the United States, approximately 26 years for the experimental group respondents and 32 years for the control group respondents.

Occupationally, only 22 of the 66 respondents reported that they were working, with a majority engaged in service occupations. Fifty-two respondents indicated that there was another adult in the family, close to 70 percent of these identifying that person as the father. More than 60 percent of the second adult in the family in each group was reported as currently employed. Labor and crafts were the principal occupational categories of a majority of the employed second adults. Family income, as can also be seen in Table 15, varied little between groups; 83 percent of the experimental and 73 percent of the control group reported a total family income of less than $8,000 during the past year. Educationally, when both the respondents' and the second adults' total number of years of schooling were averaged, there was considerable similarity between groups. The experimental group recorded a mean of 9.05 years of schooling and the control group a mean of 8.78 years of schooling.

Data related to family composition can also be seen in Table 15. Again the two groups appeared to be quite similar, with approximately five individuals,

Table 15

Background Characteristics (Amanecer)

	SITE: Corpus Christi				SITE: Laredo			
	Experimental (n = 36)*		Control (n = 30)		Experimental (n = 44)		Control (n = 45)	
	%**		%		%		%	
1. Respondent								
Mother	92		90		87		89	
Father	3		0		5		2	
Other	5		10		7		9	
2. Ethnicity								
Hispanic	94		93		96		91	
Anglo	6		0		2		7	
Black	0		7		0		2	
Other	0		0		2		0	
3. Principal Caretaker								
Mother	97		90		84		89	
Father	0		0		9		2	
Other	3		10		7		9	
4. Other Adult								
Mother	4		0		9		2	
Father	73		69		65		67	
Other	23		31		26		30	
5. Occupation of Respondent								
Professional/Manager	7		3		11		4	
Clerical/Sales	6		0		41		24	
Crafts	0		0		2		0	
Skilled/Semiskilled Laborer	11		20		7		7	
Service	25		17		23		42	
Not working	58		77		16		22	
6. Occupation of Other Adult								
Professional/Manager	0		0		9		11	
Clerical/Sales	6		0		16		11	
Crafts	17		13		5		9	
Skilled/Semiskilled Laborer	25		30		20		18	
Service	8		10		23		16	
No response	44		47		27		33	
7. Family Income								
$0-5,000	56		53		16		24	
5,001-8,000	27		20		43		36	
8,001-plus	17		27		41		40	
8 Education of Adults in Home								
0 to 9 years	46		46		33		52	
9 to 12 years	42		50		38		26	
13 years plus	12		4		29 ***		17	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
9. Years in U.S.	26.21	10.65	32.23	12.15	26.87	13.83	25.33	15.00
10. Average Family Size	5.25	1.98	5.47	1.70	4.75	1.83	4.91	2.08
11. Average Number of Children	3.14	1.36	3.27	1.23	2.82	1.74	2.78	1.77
12. Average Age of Children	5.28	2.41	6.43	3.56	7.11	6.31	6.56	4.00

* Total number of respondents within a group; number of respondents to individual items or scales may vary.

** Percentages may not total 100 owing to rounding.

*** Statistically significant difference between experimental and control groups at $P > .05$.

Table 16

Language Ability and Usage* (Amanecer)

	SITE: Corpus Christi				SITE: Laredo			
	Experimental		Control		Experimental		Control	
	(n = 36)		(n = 36)		(n = 44)		(n = 44)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Ability of Parent								
English	2.30	.74	2.10	.67	2.07	.84	1.61	.94
Spanish	1.69	.77	1.88	.56	2.39	.61	2.40	.61
Parental Language Usage with Child	1.97	.63	2.07	.52	2.28	.48	2.43	.54
Language Used to Teach Child	1.49	.54	1.45	.44	2.01	.60	2.20	.57
Child's Language Usage with Others	1.72	.71	1.84	.69	1.57	.59	1.44	.59
Child's Language Ability								
English	2.40	.66	2.38	.72	1.41*	.79	1.06*	.93
Spanish	2.00	1.04	2.23	.94	2.64	.49	2.44	.63

* Utilizing a three-point scale, where 1 = English, 2 = both Spanish and English, and 3 = Spanish.
** P > .05.

Table 17

Parental Aspirations/Attitudes (Amanecer)

	SITE: Corpus Christi				SITE: Laredo			
	Experimental		Control		Experimental		Control	
	(n = 36)*		(n = 30)		(n = 44)		(n = 45)	
	X̄	SD	X̄	SD	X̄	SD	X̄	SD
Attitudes toward***								
Education in General	4.34	.35	4.37	.48	4.20	.44	4.14	.46
Own Education	3.94	.97	3.97	1.12	4.00	.99	4.14**	.85
Bilingual/Bicultural Education	4.19	.43	4.08	.54	4.06	.38	4.02	.43
Educational Aspirations (in years)	15.72	2.53	15.83	2.2	16.91	1.52	16.36	4.23

	%	%	%	%
Occupational Aspirations				
Professional	77.8	76.7	75.0	77.8
Clerical	11.1	10.0	20.5	17.8
Skilled/Semiskilled Laborer	2.8	6.6	2.3	4.4
Childs Choice	8.3	6.7	2.3	0
No Response	0	0	0	0

* Number of respondents vary for each subscale.

** P > .05.

*** Attitudes were rated on a five-point scale, where 5 = a positive response and 1 = a negative response.

three of whom are chidren, living in each home. The age of the children was not significantly different between groups. The mean age in the experimental group was 5.28 years and in the control group 6.43 years. Sixty-two of the 66 respondents indicated that the mother took care of the sample child most of the time. It was typical in both groups for only the sample child to have been exposed to a bilingual bicultural education program, as only 28 percent of the sample reported having another child with previous educational experience of this type.

No significant differences between experimental and control groups were noted on the measures of adult language ability (Table 16). Competence in English was judged as somewhat higher than competence in Spanish for both groups. When the respondents were asked what language they and the second adult generally used in speaking to their children, both the experimental and control groups indicated that they employed English and Spanish almost equally. In identifying what language was used to teach the child such things as colors, nursery rhymes, and counting, the two groups reported a preference for using English rather than Spanish.

Similarly, the respondents were asked to identify the language used most often by the child with other individuals, including parents, siblings, other relatives, and friends. The results indicated that the children from both groups tended to use both languages. When the respondents judged the child's ability to understand and speak Spanish and English on a four-point scale from "not at all" to "very well," the respondents from both groups indicated that the children understood and spoke English and Spanish "fairly well."

Table 17 presents the data on parental aspirations for their children and parental attitudes toward education. When the respondents were asked the kind of job they would like their child to have when the child grows up, 77 percent of both groups indicated a professional or technical level position. When asked to identify the level of education they wished their child to complete, both groups hoped that their children would have a complete college education. Both groups also demonstrated highy favorable attitudes toward their own educational experiences, education in general, and bilingual bicultural education.

Laredo, Texas

Significant differences favoring the experimental over the control group were recorded in the number of years parents attended school and the child's ability to understand and speak the English language.

The adult sample at Laredo was composed of 44 experimental and 45 control group respondents, with 89 percent of the respondents in the two groups identifying themselves as the mothers of the chidren. Table 15 presents the sociocultural and economic background of the sample. Ethnically, 93 percent, or 83 of the 89 respondents, identified themselves as Hispanics. The two groups had spent a comparable amount of time in the United States, approximately 27 years for the experimental group and 25 years for the control group.

Occupationally, 72 of the 89 respondents indicated that they were currently employed. Table 15 shows the kind of employment reported, with approximately 65 percent of the sample from both groups engaged in either clerical, sales, or service occupations. There was a tendency for the experimental group respondents to hold more clerical and sales positions and for the control group respondents to hold more service positions. When asked whether there was a second adult in the home, a total of 81 respondents from both groups responded affirmatively. Sixty-four percent of the second adults were reported to be the child's father and 23 percent were indicated as not related to the child. As can be seen in Table 15, 70 percent of the second adults in the home in both groups were reported to be currently employed. Family income varied little between groups; approximately 60 percent of each group reported a total family income of less than $8,000 for the past year. Educationally, when both the respondents' and the second adults' total number of years of schooling were averaged, there was a significant difference between groups. As can be seen in Table 15, this difference probably resulted from the control group dyads' education being skewed to the lower range, whereas the years of education for the experimental group parents was more evenly distributed across the ranges.

The two groups appeared quite similar in the total number of people living in the home; the experimental group respondents had a mean of 4.75 persons and the control group respondents reported a mean of 4.91 persons. Likewise, each group reported a similar number of children living in the home. The age of the children was not significantly different between groups; the experimental group reported a mean age of 7.11 years and the control group reported a mean age of 6.56 years. Seventy-seven of the 89 respondents indicated that the mother rather than another individual took care of the child most of the time. It was also typical in both groups for only the sample child to have been exposed to a bilingual bicultural education program, as only 23 percent of the total sample reported having another child with previous bilingual bicultural education experience.

Table 16 reports the data related to language ability and usage among the members of the sample. The combined adult measure indicated no statistically significant differences between groups. Spanish ability was judged superior by both groups. The respondents of the two groups indicated that they and the other adult generally used both English and Spanish, with a tendency to emphasize Spanish when speaking to their children. In teaching the child, the tendency was for the two groups to use both languages. Similarly, the respondents felt that the child used both languages with other individuals, including parents, siblings, other relatives, and friends. The respondents from both groups reported that the children spoke fair Spanish, but the groups differed significantly in their assessment of the children's language ability in English. The experimental group estimated that their children had some ability in English, whereas control group respondents estimated that their children's ability in English was almost nonexistent.

Table 18 presents the data on parental aspirations for the child's occupation and education and parental attitudes toward education. When the respondents were asked the kind of future job they would like their child to have, 75 percent of the experimental group and nearly 78 percent of the control group indicated a professional or technical level position. When asked to indicate the level of education they wished their child to complete, approximately 90 percent of the total sample indicated four years of college or higher. The respondents of both groups recorded highly favorable attitudes toward all categories of education.

Summary of Parent Data for the Amanecer Model

The parent samples participating in the Amanecer curriculum demonstrated very few differences between experimental and control groups within a site. The Corpus Christi parental sample showed no significant differences between experimental and control groups. The Laredo site, however, exhibited differences in parental education levels and the perceptions of children's language ability (see Tables 15 and 16). The Laredo experimental group showed a significantly higher education level and rated children's English language ability significantly higher than their control group counterparts. These differences may be attributable to nonrandom assignment of children at

Table 18

Results of 2 x 2 MANOVA (Experimental Grouping x Site)
Significance Tests on Selected Groupings of Variables
from Parental Questionnaire

	Amanecer			Nuevas Fronteras			Un Marco Abierto		
	Corpus & Laredo			Corona & Rio Grande			Milwaukee & East Los Angeles		
	Site	Group	Site x Group	Site	Group	Site x Group	Site	Group	Site x Group
Parental Attitudes 1. Bilingual education 2. Purpose of school 3. Parent's own schooling	*	-	-	*	*	*	-	*	*
Language Usage 1. Usage with friends 2. Instructional usage by parents 3. Usage by parents with child in other settings	*	-	-	*	-	-	-	-	-
Family Background 1. Income 2. Size of home 3. Parental education	*	-	-	*	*	-	-	-	-
Home Experience 1. Exposure to play things 2. Exposure to school material	-	-	-	-	-	-	*	-	-

* P>.05
- Not significant

that site.

Overall, the Corpus Christi and Laredo sites differed on several variables. First, socioeconomic background differences between the sites appeared in areas of occupational status, family income, and education. Occupationally, both adults were more likely to be working in Laredo than in Corpus Christi. In addition, it appears that of those adults who were employed, the Laredo population had more white collar occupations than the parents at Corpus Christi. This, together with the fact that a higher percentage of both adults were employed in Laredo, may account for the difference in income levels. The number of years of education completed by the parents at the two sites also appeared to differ, with Laredo adults generally having completed more years of schooling than those in Corpus Christi. There did not appear to be differences among the parents on the other background variables, including the identity of the respondents, ethnic background, or the period of time lived in the United States. Likewise, there appeared to be little difference between the two parent samples in family composition.

Differences were noted in language ability and language usage between the two sites. It appears that at the Laredo site the parents had a greater tendency to use Spanish with their children, to perceive their children as using English rather than both languages, and to see their children as having less ability in English and more ability in Spanish than did the parents at Corpus Christi.

Finally, differences were not generally apparent between the two groups relative to parental aspirations for children and parental attitudes toward education.

Table 18 shows the results of the MANOVA used to test for differences between parents of control and experimental children in the Amanecer, Nuevas Fronteras, and Marco Abierto models.

NUEVAS FRONTERAS MODEL

Rio Grande, Texas

The sample population at the Rio Grande site consisted of 28 experimental and 33 control respondents. The overwhelming majority of respondents were identified as Hispanic and most were mothers. Control families had spent a shorter average period of time in the United States (experimental, 21 years; control, 15 years), but this difference was not statistically significant.

There were no significant demographic differences between the two groups, as indicated in Table 19. The distribution of occupations for either the respondents or the other adult in the home did not differ between groups. As slightly over 60 percent of all respondents did not work, the second adult in the household was generally the breadwinner. Principal occupations for the approximately 65 percent of these individuals who were employed were in labor and crafts. The family income of both groups was comparable, with slightly more than one-third of each group earning less than $5,000. There was, however, a tendency for control families to have somewhat more households in the over-$8,000 category. The majority of both experimental and control group parents had nine or fewer years of education.

Table 19 also depicts five family composition measures. Mothers were generally the principal caretakers of the children in families averaging 5.5 persons for the experimental and 5.0 for the control groups. Children's ages as well as sibling exposure to bilingual bicultural educational programs also did not differ between the groups. In estimating their own as well as the second adult's language ability in English and Spanish (Table 20) the respondents did not differ significantly. Spanish and English competence for the two groups was quite similar; both judged their ability as approaching good in the former and

Table 19

Background Characteristics (Nuevas Fronteras)

	SITE: Rio Grande City		SITE: Corona	
	Experimental (n = 28)*	Control (n = 33)	Experimental (n = 38)	Control (n = 40)
	%**	%	%	%
1. Respondent				
Mother	96	97	97	90
Father	0	3	0	3
Other	4	0	3	8
2. Ethnicity				
Hispanic	100	97	66	75
Anglo	0	3	24	10
Black	0	0	3	15
Other	0	0	8	0
3. Principal Caretaker				
Mother	93	97	95	85
Father	0	0	0	3
Other	7	3	5	13
4. Other Adult				
Mother	4	0	0	13
Father	74	91	64	77
Other	22	9	36	10
5. Occupation of Respondent				
Professional/Manager	4	0	5	10
Clerical/Sales	32	9	3	5
Crafts	0	0	3	0
Skilled/Semiskilled Laborer	0	3	5	3
Service	7	21	11	8
Not working	57	64	74	73
6. Occupation of Other Adult				
Professional/Manager	4	0	8	0
Clerical/Sales	0	9	5	3
Crafts	21	12	13	15
Skilled/Semiskilled Laborer	29	30	18	30
Service	4	9	8	5
No response	36	33	45	45
7. Family Income				
$0-5,000	35	36	37	29
5,001-8,000	58	38	26	53
8,001-plus	8	26	37	18
8 Education of Adults in Home				
0 to 9 years	56	74	47	54
9 to 12 years	37	19	38	34
13 years plus	7	6	16	10

	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
9. Years in U.S.	21.26	14.29	15.26	10.[illegible]	8.84***	7.93	17.19	11.89
10. Average Family Size	5.54	2.08	5.00	1.97	5.47	1.87	4.76	1.67
11. Average Number of Children	3.18	1.59	3.13	1.88	3.05	1.52	3.13	1.64
12. Average Age of Children	5.71	2.77	5.81	3.13	5.11	1.72	5.58	2.34

* Total number of respondents within a group; number of respondents to individual items or scales may vary.

** Percentages may not total 100 owing to rounding.

*** Statistically significant difference between experimental and control groups at P> .05.

Table 20

Language Ability and Usage* (Nuevas Fronteras)

	SITE: Corona				SITE: Rio Grande			
	Experimental (n = 38)		Control (n = 40)		Experimental (n = 28)		Control (n = 33)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Ability of Parent								
English	2.04	.99	1.79	1.17	1.29	1.08	1.06	1.17
Spanish	1.70	1.09	1.75	1.10	2.57	.46	2.47	.54
Parental Language Usage with Child	1.83	.82	2.00	.82	2.61	.46	2.56	.46
Language Used to Teach Child	1.80	.89	1.99	.98	2.46	.92	2.50	.77
Child's Language Usage with Others	1.22	.50	1.24	.44	1.51	.73	1.39	.66
Child's Language Ability								
English	2.39	1.05	1.84	1.12	1.04	.82	.91	.91
Spanish	1.47	1.22	1.78	1.23	2.64	.49	2.48	.83

* Utilizing a three-point scale, where 1 = English, 2 = both Spanish and English, and 3 = Spanish.

Table 21

Parental Aspirations/Attitudes (Nuevas Fronteras)

	SITE: Rio Grande				SITE: Corona			
	Experimental		Control		Experimental		Control	
	(n = 28)		(n = 33)		(n = 38)		(n = 40)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Attitudes toward***								
Education in General	4.0	0.6	4.5**	0.7	4.3	0.5	4.4	0.5
Own Education	3.3	0.9	3.6**	1.4	4.0	0.9	3.9	1.1
Bilingual Bicultural Education	3.8	0.4	4.2	0.5	4.1	0.5	4.0	0.5
Educational Aspirations (in years)	14.7	1.7	16.3**	2.1	14.6	2.1	14.2	2.0
	%		%		%		%	
Occupational Aspirations								
Professional	53.0		70.0		57.0		68.0	
Clerical	18.0		8.0		18.0		12.0	
Skilled/Semiskilled Laborer	0.0		0.0		4.0		0.0	
Childs Choice	13.0		8.0		11.0		15.0	
No Response	16.0		15.0		11.0		6.0	

* Number of respondents vary for each subscale.

** $P > .05$.

*** Attitudes were rated on a five-point scale, where 5 = a positive response and 1 = a negative resonse.

practically nonexistent in the latter. Children's language ability in English and Spanish was rated similarly for both groups. Parents perceived their children's Spanish language ability as better than their English language ability. Parents of both groups reported that when speaking to their children in general, as well as in teaching situations, they preferred to use Spanish over English. Parents of both experimental and control group children perceived their children as using both languages when speaking to siblings, other relatives, and friends, but felt there was a tendency to use English more often in these interactions.

Table 21 illustrates parental aspirations for their children's educational and occupational futures and parental attitudes toward education. The two samples were similar in their aspirations; professional level careers were hoped for by 67.7 percent of the control group families and 57.1 percent of the experimental group families. Both groups desired that their children attend college for at least two years. Respondents of both groups recorded favorable attitudes to their own educational experience, to the goals of education in general, and to bilingual bicultural education.

Corona, California

Response rates were high for both experimental (38) and control (40) group adults in Corona. As shown in Table 19, mothers were the principal respondents in nearly all cases for both groups. The majority of the respondents were identified as Hispanic, while the second largest ethnic group among the experimental group was Anglo (24 percent) and among the control group was black (15 percent). Members of the experimental group were significantly more recent arrivals to the United States, having an average residence time of slightly less than 9 years compared to over 15 years for the controls.

Respondents classified as "nonworking" comprised 74 percent of the experimental group and 73 percent of the control group. Although over half of the second adults in the household (fathers in the majority of cases) were listed as working, a substantial percentage of the respondents did not indicate any of the employment categories for these individuals. The crafts and laborer categories predominated among those individuals for whom data were available.

Experimental families were somewhat more likely than control group families to report household income over $8,000, and controls were twice as likely to have household income in the $5,000 to $8,000 range. The educational level of both groups was comparable, with the majority of the respondents and second adults having entered high school.

Table 19 also reports on several family composition variables. The average number of persons in the household of the experimental group was 5.47, whereas the average number for the control group was 4.76. Both samples of parents reported an average of three children per household, their average age being 5 years old. There was a significant difference in offsprings' bilingual experience, with the control group families reporting that on the average at least one sibling had or was having some type of bilingual bicultural educational experience.

Table 20 shows parental ratings of their own and their child's language ability, as well as their perceptions of language usage in the home. In general, both experimental and control group parents displayed similar ratings on these dimensions. In estimating the language ability in English and Spanish of adult family members, the respondents in both the experimental and control groups judged such ability as fair in each language, with a slight tendency to prefer English. The English language ability of children in experimental families was rated slightly better than the English language ability of children in control group families. Conversely, the control group rated their children's Spanish language ability higher than did the experimental group. On the average, parents of both groups used English and Spanish for general language interactions in the home as well as for specific skill instruction in, for example, colors, numbers, and shapes. Although parents of both groups reported using both English and Spanish in their language interactions with their children, they also reported that their children preferred English over Spanish when speaking with siblings, other relatives, and peers.

Table 21 summarizes a series of measures related to parental aspirations and attitudes toward their children's education and vocation. Both experimental and control families indicated the desire that their children would pursue a professional career. Additionally, both groups wanted their children to have some college experience. However, the control group parents expected a significantly higher mean level of formal schooling achievement than did the experimental group parents. In the realm of attitudes, both sets of respondents exhibited positive feelings toward the goals of education, the purposes of bilingual bicultural education, and their own educational histories. However, the control group was significantly more positive in their attitudes toward these issues.

Summary of Parent Data for the Nuevas Fronteras Model

The parental sample in the Rio Grande Head Start site appeared to be a very homogeneous population. No significant differences could be detected between the experimental and control group parents on any background and demographic factors, language ability and usage variables, or parental aspirations and attitudes (see Table 18). However, the experimental and control group parents at the Corona site exhibited substantial differences with regard to years in the United States and attitudes toward education and children's vocation. These differences may be attributable to lack of randomization in general but more specifically to differences in length of residence. A good example of the relationship between length of residence in the United States and other variables is that of sibling exposure to bilingual bicultural education. The Corona control parents indicated that at least one child had been or was being exposed to such programs at the time of interviewing. Such exposure and the concurrent involvement on the part of parents might account for favorable dispositions toward the purposes of bilingual bicultural education.

Overall differences between parent samples at the Rio Grande site and the Corona site existed on several background variables. The ethnicity of the respondents at the Rio Grande site was predominantly Hispanic, whereas the Corona site had more of an ethnic mix. More respondents and second adults at the Rio Grande site tended to be employed than at the Corona site. Ironically, the Rio Grande site had a lower income level than the Corona site. This may be due to salary variation from state to state as well as to the occupational statuses of the Rio Grande sample. Additionally, the Rio Grande parents reported a lower mean level of formal schooling than the Corona parents.

As for language ability, the Rio Grande sample generally saw Spanish as the predominant language for both parents and children. The reverse was true at the Corona site, where English language ability and usage were rated higher than Spanish language ability for both parents and children. Interestingly, both the Rio Grande and Corona samples reported that their children tended to use English when speaking with siblings, other relatives, and peers.

On the whole, there were no major distinctions between sites on aspirational and attitudinal data. Both sites displayed generally positive attitudes toward education and indicated high aspirations for their children's educational and occupational attainment.

UN MARCO ABIERTO MODEL

Milwaukee, Wisconsin

The Milwaukee sample consisted of 41 experimental group and 27 control group respondents. As can be seen from Table 22, mothers were the principal respondents in most cases for both groups, and they were generally characterized as Hispanic. Both experimental and control groups reported similar number of years of residence in the United States.

The occupational status of the majority of respondents of both experimental and control groups was described as "not working." The other adult member of the household, usually the father, appeared to be the principal breadwinner for each group. Although a slightly higher percentage of the control group was employed, almost all of those for whom a response was given were clustered in the laborer category, whereas their experimental counterparts showed a more varied employment pattern. The income distributions of the experimental and control group families were similar. The control group, however, displayed a higher percentage in the $8,000 and above income category. Education of the adults composing the families in each group differed slightly, with the control group families tending to have had less secondary school experience.

Although mothers were the principal caretakers in virtually all families and the average age of children was similar for both groups, family composition varied significantly between the experimental and control groups. Control group families had a higher number of people living in the household as well as a greater number of children than the experimental group families.

Table 23 presents language ability and language usage data as reported by respondents. When asked to estimate the language ability of the adults in the home, no significant difference arose for Spanish language ability. Individuals in

Table 22

Background Characteristics (Un Marco Abierto)

	SITE: Milwaukee		SITE: East Los Angeles	
	Experimental (n = 41)*	Control (n = 27)	Experimental (n - 40)	Control (n = 38)
	%**	%	%	%
1. Respondent				
Mother	93	93	83	94
Father	5	4	8	0
Other	3	4	10	3
2. Ethnicity				
Hispanic	88	96	95	95
Anglo	12	0	0	0
Black	0	0	3	0
Other	0	4	3	3
3. Principal Caretaker				
Mother	95	96	85	95
Father	0	0	0	0
Other	5	4	15	5
4. Other Adult				
Mother	3	4	10	3
Father	76	85	62	82
Other	21	10	28	15
5. Occupation of Respondent				
Professional/Manager	0	0	3	0
Clerical/Sales	10	0	3	8
Crafts	0	0	3	3
Skilled/Semiskilled Laborer	15	11	8	8
Service	5	4	10	8
Not working	71	85	75	74
6. Occupation of Other Adult				
Professional/Manager	5	4	5	0
Clerical/Sales	2	0	3	5
Crafts	5	0	8	24
Skilled/Semiskilled Laborer	39	70	30	37
Service	7	0	5	3
No response	42	26	50	32
7. Family Income				
$0-5,000	31	4	39	19
5,001-8,000	28	32	21	30
8,001-plus	42	64	41	51
8 Education of Adults in Home				
0 to 9 years	66	76	64	59
9 to 12 years	7	24	21	38
13 years plus	26	0	14	3

	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
9. Years in U.S.	15.6***	11.9	13.1	10.0	13.6	11.2	15.1	9.5
10. Average Family Size	5.2	1.9	6.4	2.2	4.6	1.7	4.7	1.7
11. Average Number of Children	3.3***	1.8	4.7	2.4	2.4	1.1	2.5	1.2
12. Average Age of Children	5.6	2.8	5.9	3.9	5.3	2.3	5.7	3.4

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* Total number of respondents within a group; number of respondents to individual items or scales may vary.

** Percentages may not total 100 owing to rounding.

*** Statistically significant difference between experimental and control groups at P> .05.

Table 23

Language Ability and Usage* (Un Marco Abierto)

	SITE: Milwaukee				SITE: East Los Angeles			
	Experimental (n = 41)		Control (n = 27)		Experimental (n = 40)		Control (n = 40)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Language Ability of Parent								
English	1.77	1.08	1.30**	.81	1.65	1.04	1.74	1.00
Spanish	2.30	.97	2.40	.82	2.23	1.07	2.26	.83
Parental Language Usage with Child	2.14	.78	2.43	.62	2.33	.83	2.29	.81
Language Used to Teach Child	2.19	.95	2.59	.89	2.2	.95	2.24	.94
Child's Language Usage with Others	1.32	.40	1.43	.58	1.28	.40	1.35	.49
Child's Language Ability								
English	1.90	.94	1.17***	.89	1.48	1.12	1.54	1.17
Spanish	1.95	1.14	2.44***	.80	1.98	1.10	2.16	1.05

* Utilizing a three point scale, where 1 = English, 2 = both English and Spanish, and 3 = Spanish.

** $P > .05$.

*** $P > .01$.

the experimental group sample, however, rated English language ability higher than those in the control group. Perceptions of children's English and Spanish language ability also differed significantly between the groups. Experimental respondents' view of their offsprings' English ability was significantly higher than that of the control group, whereas the reverse was true for the ratings of children's Spanish.

Parental language usage with children was similar for both groups. Both groups tended to use more Spanish in general language interactions and also as a medium of instruction; for example, in teaching colors, numbers, and shapes. Although all respondents tended to use both languages, they reported that their children used English when speaking with siblings, other relatives, and peers.

Although more control parents hoped for a professional career for their child (Table 24), the overall distribution for occupational aspirations was not significantly different for the two groups. Aspirational differences were more distinct when respondents gave the years of schooling they desired for their children. The control group respondents, on the average, wanted significantly more schooling for their children and most viewed education through college as desirable. Both sets of parents demonstrated favorable attitudes toward their own educational experiences. Yet on measures of attitudes toward education in general and toward bilingual bicultural education, the experimental and control groups differed. Control group parents were significantly more positive toward these two dimensions than experimental group parents.

East Los Angeles, California

The response total for the East Los Angeles site was 40 for the experimental group and 38 for the control group. Mothers were the individuals most often

Table 24

Parental Aspirations/Attitudes (Un Marco Abierto)

	SITE: Milwaukee				SITE: East Los Angeles			
	Experimental (n = 41)		Control (n = 30)		Experimental (n = 40)		Control (n = 38)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Attitudes toward***								
Education in General	4.1	0.6	4.4**	0.5	4.4	0.4	4.3	.50
Own Education	4.0	1.1	3.5	1.4	3.7	1.2	3.6	1.2
Bilingual Bicultural Education	3.9	0.5	4.3**	0.5	4.2	0.4	4.2	0.5
Educational Aspirations (in years)	12.9	3.4	15.3	2.5	17.4	1.2	16.1	4.5
	%		%		%		%	
Occupational Aspirations								
Professional	59.0		89.0		98.0		87.0	
Clerical	15.0**		7.0		3.0		3.0	
Skilled/Semiskilled Laborer	13.0		0		0		0	
Childs Choice	7.0		4.0		0		0	
No Response	0		0		0		8.0	

* Number of respondents vary for each subscale.

** $P > .05$

*** Attitudes were rated on a five-point scale, where 5 = a positive response and 1 = a negative response.

interviewed in both experimental and control group samples. However, 17.5 percent of the experimental group respondents were fathers or other adults compared to 2.6 percent for the control group sample. Nearly all respondents were Hispanic and had a similar number of years of residence in the United States (see Table 22). The East Los Angeles control and experimental groups did not differ on any of the variables compared.

Approximately three-quarters of the respondents for both groups did not report any employment. When asked about the occupational status of the second adult in the household, typically the father, the control group reported a higher participation in the job market than did the experimental group. Family income distribution for the groups reflected the employment patterns, the experimental group reporting a higher frequency for the $0 to $5,000 range. Number of years of education for respondents in both groups was similar, the experimental group displaying more postsecondary school exposure.

Family composition for both groups was very similar. There was, however, a greater tendency for the experimental homes to have nonmaternal principal caretakers. The average number of people in the household for both groups was close to five per home, with children making up half of this total. The average age for children in the households was 5.33 for the experimental group and 5.66 for the control group. Both sets of respondents reported that siblings were not then involved in bilingual bicultural educational programs, nor had they previously been involved in such programs in the past.

Table 23 depicts adult and child language ability and usage in English and Spanish. Experimental and control groups did not show any differences on any of the measures. Both sets of adults rated their Spanish language ability as higher than their English language ability. The same was true for parental ratings of children's language ability.

In the area of language usage, both experimental and control group adults reported using more Spanish for general language interaction and when teaching their children. The children themselves were viewed by both groups as using English in conversations with siblings, other relatives, and peers.

As can be seen from Table 24, there are no significant differences between the attitudes or aspirations of the experimental and control groups. Both sets of parents desired professional level careers for their children with concomitant college attendance. Both groups also reported favorable attitudes toward education in general, bilingual bicultural education in particular, and their own individual educational histories.

Summary of Parent Data for the Marco Abierto Model

The East Los Angeles site showed no significant differences between the experimental and control groups on any of the variables previously outlined. On the other hand, differences between experimental and control groups in such areas as household size, parental English ability, children's English and Spanish ability, and educational aspirations and attitudes were found at the Milwaukee site. At this site the control group was characterized by larger families, better Spanish than English language ability, higher educational aspirations, and more positive attitudes toward education than the control group parents.

Overall, the East Los Angeles site and the Milwaukee site did not appear to differ on background features. The household size of the Milwaukee sample tended to be a bit larger than that of the East Los Angeles sample. Language ability across sites was similar. Parents were more inclined to speak Spanish more than English but used both languages in interactions with their children. Children in both Milwaukee and East Los Angeles were rated slightly better in their Spanish language ability than their English language ability. Respondents in both locales reported a high usage of English by their children in relation to language interaction with siblings, other relatives, and friends. Parental aspirations and attitude patterns for both the East Los Angeles and Milwaukee sites were also similar. There was a slight tendency by the East Los Angeles respondents to desire a higher level of school experience for their children than their counterparts at the Milwaukee site. Attitudes toward education in general, bilingual bicultural education in particular, and parents' perceptions of the benefit of past schooling were favorable across the replication sites.

D. Teacher Assessment Data

The 44 teachers and aides comprising the sample were distributed over 23 classrooms in which the different curriculum models were implemented. Although it is inappropriate to use inferential statistics with such a small total sample, frequency distributions and cross-tabulations have been generated to allow comparison of background characteristics and attitudes. The teacher-aide configurations, teaching load, and classroom arrangement varied within a model and at times within a particular site. For example, at one of the New York sites one teacher-aide combination formed the entire experimental population, as they taught both classrooms of experimental children at that locale. At the Milwaukee site two of the classrooms had one teacher and two aides, while the third followed the general pattern common to all other sites of one teacher and one aide. The two morning classes at Eastmont I in Los Angeles were conducted jointly in a single large classroom, whereas the one afternoon class had the same room all to itself.

Background Characteristics

As can be seen from Table 25, within and across site differences were

Table 25

Background Characteristics of Teachers and Aides

	ALERTA		AMANECER		NUEVAS FRONTERAS		UN MARCO ABIERTO	
	Lower East Side	South Bronx	Corpus Christi	Laredo	Corona	Rio Grande City	East Los Angeles	Milwaukee
Age ($\bar{X}$)	45.0 (SD=15.5)	34.5 (SD=8.5)	27.7 (SD=4.7)	32.7 (SD=9.2)	40.7 (SD=9.1)	45.2 (SD=16.7)	35.3 (SD=6.6)	41.1 (SD=7.7)
Sex								
Male	1							
Female	1	4	6	6	6	6	6	8
Education ($\bar{X}$)	15.0 (SD=4.2)	14.2 (SD=1.7)	12.7 (SD=2.4)	11.6 (SD=2.7)	14.2 (SD=2.7)	14.3 (SD=1.2)	10.2 (SD=1.2)	13.7 (SD=3.1)
Ethnicity								
White Anglo					3		1	
Mexican American			6	6	2	6	5	4
Puerto Rican		3						4
Black	1	1						
Other Hispanic	1				1			

found in the background characteristics of the instructional teams implementing a particular model. Although sex was consistent across all sites, with 43 of the 44 respondents being female, average age at a site ranged from 27.6 years (Corpus Christi) to 45.1 (DeWitt, New York, and Rio Grande). Age differences were also found within a site. A range of 14 years or more existed between the average age of at least two instructional teams at three of the eight sites. Age differences were also reflected in the totals of amount of time spent in the United States, with the averages per site ranging from 24.2 years to 45.1. In only two sites (Rio Grande and Corona) were all of the staff members native born. Similarly, the education of the teaching staffs varied greatly across the models and within certain sites or models. Although the average level of education for the teaching staffs at all sites was slightly more than high school (12.9 years), the average years of schooling at a particular site ranged from 10.2 (Milwaukee) to 15.0 (DeWitt). Degrees varied from only a GED held by seven respondents to a Master's degree held by one teacher. All of the respondents had taken part in bilingual or multicultural workshops or in-service training, had received college credit in bilingual education, had had some other type of bilingual preparation, or had participated in a combination of these activities. Previous full-time teaching experience was minimal for the sample as a whole, with only 10 of the respondents stating that they had any such experience and only 2 having had more than five years' experience. All of the sample, however, had had full-time positions as aides or part-time teaching experience, and over half had more than two years of such experience.

The ethnic make-up of the teaching staffs in general reflected that of the students at the Head Start centers. The majority of the sample (85.7 percent) was Hispanics; four individuals (9.5 percent) were Anglos, and two individuals were black Americans. Mexican Americans composed all of the staffs at Rio

Grande, Laredo, and Corpus Christi, whereas five out of the six individuals in the sample at East Los Angeles were Mexican American and the eight-member staff at Milwaukee was equally divided between Mexican Americans and Puerto Ricans. Hispanics predominated at the South Bronx, New York, site, where three of the four individuals were Puerto Ricans and one was black, while the Lower East Side instructional unit contained a black and an Hispanic. Forty-four percent of the sample tended to use Spanish and English equally in their homes, while approximately 27 percent preferred to speak English at home, with five of those or about 11 percent of the total speaking no Spanish at home. All of the nine individuals who spoke Spanish in the home were found in the Texas and New York centers. Over 60 percent of the teachers and aides stated that they used Spanish and English in the classroom. Four educators in Laredo, three in Milwaukee, and one in Rio Grande said that they usually addressed their students in Spanish, while three individuals in New York, one in Corpus Christi, and six in Corona concluded that they spoke to the children primarily in English. Thus, it would appear that at least at some sites language use on the part of an instructor is a function not only of personal preference but also of the language composition of the classroom.

A majority of the teachers and aides (61 percent) were first or second generation Americans, whereas 10 individuals (6 at the Milwaukee site) had been born outside the United States, and 6 respondents were from families who had been in the United States longer than two generations. The parents of most respondents were engaged in clerical, craft, labor, operative, or service occupations, with only 5 fathers working as either managers or professionals. A slight majority (54.8 percent versus 45.2 percent) of the sample lived in the immediate area of the Head Start Center. Residence within close proximity of the Head Start Center predominated in Laredo, Corona, Milwaukee, and Lower

Side, New York.

Teaching Staff

Table 26 shows that the majority of the teaching staff across all sites tended to see the advantages of bilingualism as similar for native English-speaking Hispanics, non-Hispanics, and native Spanish-speaking Hispanics. More than 58 percent of the sample in each case felt that the major advantages came in areas which might be called "social" (cultural awareness, employment, communication), with most of those (44 percent, 35 percent, and 47 percent) identifying communication and understanding as the most important single advantage of bilingualism. The respondents saw greater differences in the role of a bicultural or multicultural curriculum for native English-speaking children as opposed to native Spanish speakers. The vast majority (75 percent) saw the social area and particularly cultural awareness as most important for English speakers whereas the teachers and aides were almost equally divided in identifying social or personal benefits (education, socialization, self-concept) as most important for native Spanish speakers, with 51 percent choosing the former and 49 percent mentioning the latter. In addition, at least 88.3 percent of the respondents felt it important that English-speaking non-Hispanic children participate in a curriculum which emphasizes more than one culture; that Spanish-speaking children participate in a curriculum which emphasizes their own as well as the dominant culture; that a child continue to speak Spanish after learning English; and that a child continue to be taught in Spanish even after becoming proficient in English.

In order to assess teacher attitudes toward Spanish-speaking children, a series of questions were asked which juxtaposed the use of English by native English-speaking children with the use of Spanish by native speakers of that

Table 26

Attitudes of Teachers and Aides toward Children

	SPANISH SPEAKING CHILDREN					ENGLISH SPEAKING CHILDREN				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Should speak native language as it is spoken in the home	21*	35	35	9	0	26	38	29	7	0
Should speak native language as it is spoken in the community	17	35	40	9	0	16	37	37	9	0
Should speak native language as it is presented in the textbook	5	28	37	30	0	9	35	30	26	0
Should speak second language as it is spoken in the surrounding community	7	40	42	12	0	9	35	46	9	0
Sould speak second language as it is presented in the textbook	5	40	33	23	0	5	28	37	30	0

*Percentages may not total 100 owing to rounding.

language. The respondents demonstrated little difference in their attitudes toward the type of language which should be used by Spanish- or English-speaking children. As shown in Table 27, the sample was generally in favor of the native language being spoken as it is in the home and community, with over 50 percent affirmative responses for each language group. The respondents were slightly stronger in their support of textbooks as a language model for English-speaking children than for Spanish speakers. The difference of nearly 10 percentage points in the combined "agree/strongly agree" category for this item may be a result of the teaching staffs' greater familiarity with a variety of texts in English for the age group with which they were working. The sample is rather ambivalent about the nature of a second language model for the children. There was, however, a small tendency to favor textbook and community models of English for the Spanish-speaking children as opposed to these models for their English-speaking counterparts. Over 60 percent of the sample saw Spanish-speaking and English-speaking children as having about the same ability, with 26 percent feeling that the Spanish speakers had more ability and 13 percent stating that these children were somewhat less able than their English-speaking classmates. The vast majority of the respondents (74 percent) also preferred working in a school where Spanish and English were each used equally as part of the curriculum.

On the two questions (five items) relating to the teachers' and aides' opinion of Spanish-speaking parents' language use in the home, the respondents did not find the categories mutually exclusive. When asked if parents used Spanish in the home because they had recently arrived and had no English, they had little exposure to English, the parents felt no need to use English and therefore didn't use it, or the parents felt Spanish was important for cultural reasons, close to 70 percent of the respondents chose the last reason. However,

Table 27

Teacher Sample's Attitudes toward Parent Involvement

	Very Positive	Positive	Neutral	Negative	Very Negative
Parents should be involved in the classroom	42*	47	12	0	0
If parents cannot be in the classroom, teacher should have frequent contact with the parent	40	47	14	0	0
Teacher should attempt to involve seemingly uninterested parents	61	14	23	2	0
Teacher has had personal success in involving parents	9	51	33	7	0
Teachers could do a better job with more parent participation	43	23	23	0	10
Parents provide accurate information to teacher	13	37	47	3	0

*Percentages may not total 100 owing to rounding.

each of the other reasons was identified by more than 40 percent of the sample, indicating that the teachers felt any of the possibilities may influence home language use in specific cases.

The majority of the respondents (69 percent) felt that whatever the reason for use of Spanish in the home, parents should be encouraged to speak English at home with their children. The remainder of the sample thought that parents should neither be encouraged to use English nor discouraged from using it.

All of the sample saw parental involvement in education as important (Table 28), with over 85 percent finding it to have a considerable impact on a child's progress. Similarly, all of the respondents felt that the teacher should have frequent contact with those parents unable to come to the classroom, and almost three-fourths included the initiating of such contact as something the teacher should generally undertake. Ninety percent of the teachers and aides responded that increased parent participation could help them in their teaching duties, and almost all expressed at least some success in involving parents in their programs. The respondents were less positive in their endorsement of the quality of information received from parents, with more than 86 percent reporting some inaccuracies in the data they had received.

In determining the role of parents in a child's education, the respondents were most positive in affirming that parents should visit the school whenever possible (83 percent) and that they should follow the directions of the teachers for activities at home (81 percent), whereas a minority (37 percent) felt that the parents should help the teachers determine what is to be taught. Over two-thirds of the sample stated that once in the classroom parents could fulfill any of three roles: mingle freely with the children, follow specific directions given by the teachers, and give lessons suggested by the parents and approved by the teacher. All of the teachers and aides felt that parents were an important

Table 28

Teacher Sample's Identification of the Advantages of Bilingual Bicultural Education

	SOCIAL			PERSONAL					
	Background and Cultural Awareness	Benefits Outside the Classroom (jobs, etc.)	Communication or Understanding	Education	Sociali-zation	Development of Self Concept	Language Acquisition for Its Own Sake	No Response	No Advantage
	%*	%	%	%	%	%	%	%	%
Advantages of being bilingual for native English Hispanic child	28	7	44	9	2	0	2	2	5
Advantages of being bilingual for native English non-Hispanic child	12	19	35	12	12	2	9	0	0
Advantages of being bilingual for native Spanish child	5	7	47	19	9	7	2	5	0
Importance of bicultural multicultural curriculum for English speaking students	61	0	14	9	12	2	0	2	0
Importance of bilingual multicultural curriculum for Spanish speaking students	30	7	14	19	16	9	5	0	0

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*Percentages may not total 100 owing to rounding.

source of information and that education was improved when home and school worked together. Only 58 percent, however, agreed that helping direct the teacher on how to educate the children was a parental role. Bilingual notes of welcome, special activities, and structured roles within a Head Start Center were all seen as effective means of involving parents in the school.

In judging the importance of a variety of procedures for incorporating Hispanic culture into the classroom, the respondents came out most strongly in favor of exposing children to a Hispanic role model (65.1 percent) and teaching Hispanic values (67.4 percent). The presentation of Hispanic daily life, customs, food, celebrations, objects, and songs were seen as important by slightly less than 50 percent of the respondents, whereas the discussion of the special roles which exist within Hispanic communities, such as that of comadre, and lessons on Hispanic dress were identified as important by 33.3 percent and 28.5 percent respectively.

Although the sample responses were generally favorable across the four attitudinal domains tapped by the teacher questionnaire, the within model and site differences in such background variables as age, education, teaching experience, and place of residence suggest that the behavioral manifestations of such attitudes may vary. Thus, it would appear that in addition to examining attitudinal change over time for the entire group or within a model by means of a t-test, a classroom by classroom comparison should be made. The small sample sizes involved in such an analysis preclude the use of inferential statistics. However, any differences in the degree of implementation or in child progress within a site or model can be examined in light of the attitudinal data to provide an indication of how similar sets of attitudes may vary in terms of background variables when translated into behavior within a Head Start classroom.

CHAPTER V

PRETEST RESULTS OF THE CHILD TEST BATTERY AND THE PROPOSED POSTTEST ANALYSIS PLAN

The purpose of this section is to integrate the results discussed in the previous chapter with a discussion of the evaluation designs and analyses that are to be performed at the posttest for each of the four curriculum models. A description is presented of the factor analytic techniques used to form the composite scores that will be used in the posttest analysis, including the results of the principal component analysis performed on the results of the child tests and the parent questionnaire to form the dependent variables and covariates. This is followed by a summary of the results of the analysis performed on the child test battery data, including a description of the test of significance and the findings of the comparisons made within a site (experimental and control) and between sites within a model. This information provides a logical lead-in to a discussion of the posttest analysis for each model, including a description of the analyses to be performed and a description of the variables to be analyzed and identification of any possible covariates. The section concludes with a summary of the results of the parent instrument and a presentation of the plan to integrate the parent and child data at the posttest.

A. Factor Analysis of Child and Parent Measures

A principal components analysis was conducted on selected pretest measures to determine whether a more parsimonious set of variables could be extracted for use as covariates in the posttest analysis. Initially, a separate analysis was conducted for each of the four conceptual groupings - Spanish- and English-preferred children for both L_1 and L_2 languages at sites having a sufficient number of subjects (N = 10). The strategy used in extraction was to retain all factors exhibiting eigenvalues greater than 1.0. A terminal solution was obtained by orthogonally rotating factors by the varimax method.

Measures used in the L_1 language grouping paralleled the ones used in the L_1 pretest MANOVAS; i.e., perceptual motor skills assessment, concept development, language comprehension and language production, including measures of descriptive ability, quantity, and overall quality. Measures used in the L_2 language grouping also paralleled the variables used in the L_2 MANOVAS. These variables included perceptual motor skills asessment, concept development, and language comprehension.

The factor solutions for each site and language grouping exhibited highly similar loading patterns. For this reason it was decided to pool the results across sites and conduct the principal components analysis for the entire English-preferred sample and the entire Spanish-preferred sample. Results of this analysis appear in Table 29.

Results indicated that first-language tests for both Spanish- and English-preferred children clustered into two factors. These two factors accounted for 61 percent and 64 percent of the total variation in the six measures, respectively. The factor loading patterns appeared to be similar across both language groups. Each exhibited a strong production factor and a second factor, composed of measures that asked the children only to mark a response; i.e., language comprehension measures.

For second language measures the only factor in both Spanish and English groups had an eigenvalue greater than 1.0. This factor accounted for 66 percent and 75 percent of the variation in the three measures. These results lend some credence to the presence of a general language factor in the nonpreferred language.

Table 29

Factor Loadings from Principal Components Analysis of Child Cognitive Tests: After Rotation*

First Language	English Preference		Spanish Preference	
	Factor 1	Factor 2	Factor 1	Factor 2
Perceptual Motor Skills	.47		.34	
Concept Development	.97		.97	
Comprehension	.36		.43	
Narration Quantity		.78		.75
Description	.55		.45	
Narration Quality		.87		.88
Second Language				
Perceptual Motor Skills	.88		.85	
Concept Development	.98		.89	
Comprehension	.53		.27	

* Only factor loadings greater than .30 are reported.

Table 30 illustrates the results of a varimax rotated principal components analysis of 21 measures obtained from the parent questionnaire. In this analysis the responses of all parents were examined concurrently. As the table indicates, five factors were extracted accounting for 59 percent of the total variation in the 21 variables. For clarity of description, only significant loadings greater than .30 have been reported. Factors 1 and 2 seem to reflect the quality and quantity of language usage of parents and children as well as variables affecting that usage; i.e., parental education and exposure to American culture. A third factor represented parental attitudes toward aspects of education. Variables related to various facets of the family such as size and age of siblings loaded strongly on a fourth factor. The final factor reflected the preschool exposure of children to play materials and various school-related concepts.

On the basis of the above analysis, a reduced set of scores will be created. These factor scores will be used as possible covariates in the analysis of both child and parent posttest results. As covariates they will be used either to control for preexisting differences between experimental and control groups or, in those cases where pretest differences are not present, to minimize within group error variation (see Appendix H for correlations between child and parent measures).

Before continuing, it should be noted that Singer and Goodrich (1979) recently found in their Evaluation of National Day Care study that the attrition rates between pre- and posttesting ranged as high as 25 percent. Given the relatively small number of subjects in the present evaluation design, such a high attrition rate would seriously limit the power of any statistical inferences regarding group differences at the time of posttest (see Tables 31a and 31b for projected attrition rate at each site).

Since the cell sizes were small and disparate in the percentage of children preferring English and Spanish, the decision was made to analyze the data for the

Table 30

Factor Readings from Principal Components Analysis
of Parental Measures: After Rotation*

	Factor$_1$	Factor$_2$	Factor$_3$	Factor$_4$	Factor$_5$
Parent's English language ability	.85				
Parent's Spanish language ability	-.45	.57			
Child's English language ability	.74				
Child's Spanish language ability	-.41	.65			
Language use in teaching children	-.79				
Language interaction of child and parent	-.82	.33			
Language interaction of child and others		.48			
Parental education	.70				
Exposure to culture	.44				
Attitudes toward purpose of schooling			.70		
Attitudes toward involvement in child's schooling			.76		
Attitudes toward bilingual education			.71		
Attitudes toward parent's schooling			.38		
Site of home				.79	
Number of children in home				.89	
Previous experience of children				.42	
Average age of children				.48	
Preschool exposure to play things					.82
Preschool exposure to school materials					.41

*Only factor loadings greater than .30 are reported.

child test battery separately for each site. Should the attrition rate reach a 25 percent level, reducing the cell size to 10 or less, the posttest analysis will consist mainly of reporting descriptive data on each of the dependent variables.

ALERTA MODEL

The analysis of the data from the two sites that constitute the Alerta model consisted of a multivariate t-test (Hotelling's T^2) performed on the English-speaking children in experimental and control groups comparing their scores in their first and second language. Since the number of Spanish speakers was sufficient (see Tables 31a and 31b), a similar analysis was performed on the data from the South Bronx sites for both the English and the Spanish speakers.

The results of the analysis for the Lower East Side site indicate that for the cognitive measures no significant difference exists between experimental and control groups for either first or second language. Similarly, at the South Bronx site no significant differences were detected between experimental and controls for either English- or Spanish-speaking children in first or second language tests. Further, no differences were observed between experimental and control groups at either of the Alerta sites on the socioemotional ratings.

The analysis for both these sites will consist of analyzing the child data separately for each site. Given the small sample size and the selection procedures used to form the experimental and control groups at the Lower East Side site, the analysis at the posttest will consist of reporting descriptive data (means and standard deviations) for each language group and plotting these data to detect growth patterns among the groups that may be due to the effects of the program.

At the South Bronx site, a multivariate t-test (Hotelling's T^2) will be used to test for differences between the experimental and control groups in both the

Table 31a

Number of Children in the Evaluation by Model, Site, and Language/ Treatment Group with the Anticipated Rate of Attrition

CURRICULUM MODEL -- ALERTA

Language Preference	Lower East Side		South Bronx		
	Cell Size	Experimental	Control	Experimental	Control
Spanish	n =	4*	3*	2*	11
	n - 25% =	3*	2.2*	1.5*	8.5
	n - Dropped up to Jan. 31	4*	3*	1*	6*
English	n =	15	7*	18	13
	n - 25% =	11.25	5.25	13.5	9.75
	n - Dropped up to Jan. 31	14	7*	17	10

CURRICULUM MODEL -- AMANECER

Language Preference	Corpus Christi		Laredo		
	Cell Size	Experimental	Control	Experimental	Control
Spanish	n =	8	6	43	40
	n - 25% =	6	4.5	32.25	30
	n - Dropped up to Jan. 31	8*	5*	41	38
English	n =	30	25	2*	4
	n - 25% =	22.5	18.75	1.5*	3
	n - Dropped up to Jan. 31	29	24	2*	4*

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*Indicates that cell size is too small for statistical comparisons.

Table 31b

Number of Children in the Evaluation by Model, Site, and Language/ Treatment Group with the Anticipated Rate of Attrition

CURRICULUM MODEL -- NUEVAS FRONTERAS

Language Preference	Corona		Rio Grande		
	Cell Size	Experimental	Control	Experimental	Control
Spanish	n =	13	18	35	36
	n - 25%	9.75	13.5	26.25	27
	n - Dropped up to Jan. 31	11	17	32	35
English	n =	26	23	2*	2*
	n - 25%	19.5	17.25	1.5*	1.5*
	n - Dropped up to Jan. 31	24	20	2*	2*

CURRICULUM MODEL -- UN MARCO ABIERTO

Language Preference	Milwaukee		East Los Angeles		
	Cell Size	Experimental	Control	Experimental	Control
Spanish	n =	19	25	25	26
	n - 25%	14.25	18.75	18.75	19.5
	n - Dropped up to Jan. 31	18	22	24	23
English	n =	23	5*	15	14
	n - 25%	17.25	3.75*	11.25	10.5
	n - Dropped up to Jan. 31	22	5*	13	12

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* Indicates that cell size is too small for statistical comparisons

English- and the Spanish-speaking samples. Owing to the small sizes of these respective groups, statistical adjustment procedures such as MANCOVA are inappropriate. Further, it should be noted that in the event the attrition rate of children reaches 25 percent, the use of any statistical comparisons will be undertaken with great caution, since small cell sizes may reduce the power of detecting existing differences.

AMANECER MODEL

As the demographic data indicated, a significant difference existed in the language grouping at the two Amanecer sites. Only 6 of the 88 children or 7 percent of the total sample at the Laredo site were English speaking, while 55 of the 69 chiildren or 80 percent of the total sample at the Corpus Christi site were English speaking. Given this disparity of the language make-up within the Amanecer site, no statistical comparisons of test battery data were made between the sites of the Amanecer model. Experimental and control group comparisons at these two sites were restricted to the dominant language groupings; i.e., Spanish-speaking children at the Laredo site and English-speaking children at the Corpus Christi site.

At the Corpus Christi site, results of Hotelling's T^2-test revealed no statistical differences between English-speaking experimental and control groups in either first or second language on the cognitive measures of the test battery. Additionally, univariate t-tests indicated that no differences were present between experimental and control groups on socioemotional development. Comparisons of the performances of the Spanish-speaking experimental and control samples at the Laredo site revealed similar findings.

Given the nature of these findings, posttest analysis within the Amanecer model will proceed in the following manner. Analysis for the 6 English-speaking children from Laredo and the 14 Spanish-speaking children from Corpus Christi will consist of reporting descriptive data only. Owing to the small number of children, statistical tests will not be performed for these groups. Further, no attempts will be made to compare results between the sites because of the disproportionality in the language groupings. Therefore, the effects of the Amanecer model on English-speaking children will be estimated from the Corpus Christi site, while effects of this model on Spanish-speaking children will be estimated from the Laredo site.

The analysis that will be used for these purposes will be a one-way MANCOVA (multivariate analysis of covariance). The use of covariates in the present model will not be to adjust for preexisting differences but rather to statistically reduce within-group error variation, thus increasing the power of the test. The covariates to be used in the MANCOVA will include the factor scores created from the principal component analysis of the child data (see Tables 30 and 31) and, if possible, the background factor scores as derived from the pretest results on the parent questionnaires. Dependent variables in the analysis will include language comprehension scores, language production scores, language acquisition scores, and socioemotional scores.

NUEVAS FRONTERAS MODEL

Analysis of differences between the sites for the Nuevas Fronteras model (Rio Grande and Corona) showed that only 4 of the 75 children at Rio Grande spoke English, while at Corona 49 of the 80 children spoke English. In addition, the manner in which the experimental and control groups were formed differed at each site. The Corona site chidren were not randomly assigned to experimental and control groups, while at Rio Grande, children were randomly assigned to an experimental and a control group. Because of these differences, the child data at these sites are to be analyzed separately.

A Hotelling's T^2 (multivariate t-test) was used to test for differences between experimental and control groups at each site. Tests of significance were not performed for English speakers at Rio Grande, owing to the small number of children at this site who spoke English. At the Rio Grande site, the results of the 2 x 2 MANOVA indicated that Spanish-speaking children were comparable on all of the cognitive measures in both first and second languages. Also, no differences were found between Spanish-speaking children in the experimental and control groups on syntactical development in first and second language. Utilizing a univariate t-test, no differences were observed between experimental and controls on socioemotional development.

The results of the 2 x 2 MANOVA indicated that at the Corona site no differences existed between English speakers in the experimental and control groups on first-language cognitive measures, while differences were found between experimental and control children on second-language cognitive measures. The results of a univariate t-test indicated that Spanish-speaking children were comparable in their socioemotional development. Comparability was also found between experimental and control groups in syntactical language development in first and second languages.

For the Spanish speakers at Corona, the MANOVA revealed no significant differences between groups on first-language cognitive measures, but differences were found between these groups on second-language cognitive measures. A univariate t-test also revealed that experimental and controls were comparable on syntactical development in first and second languages.

In light of the observed differences between sites, the analysis at the posttest will consist of analyzing the data for each site separately for the English speakers and Spanish speakers as well as combining the test results for the Spanish speakers across both sites. To test the effects of the Nuevas Fronteras model, several analyses will be undertaken. The first analysis will compare experimental and control children within each site. The test of significance that will be used for this statistical comparison will be the Hotelling's T^2. Investigating the possibility of using covariates as in the Amanecer model will not be done for these children at posttest owing to the small number of English-speaking children in this sample. The second analysis will involve collapsing the child data across both sites for Spanish speakers only. A 2 x 2 MANCOVA (multivariate analysis of covariance) will be performed to estimate (a) the effects of the Nuevas Fronteras program on the Spanish speakers, (b) the consistency of these effects across the two sites, and (c) any group-by-site interactions. The dependent measures and covariates to be used in these analyses will parallel the ones to be used in the Amanecer model analysis.

UN MARCO ABIERTO

The descriptive data for language preference indicate that only 5 of the 28 children in the control group at the Milwaukee site are English speaking, while at the East Los Angeles site there is a balance, with 14 of the English speakers in the control and 15 in the experimental group. Given the small number of children in the control group who are identified at the Milwaukee site as speaking English, no statistical comparisons were made between experimental and control groups at this site.

The results of the Hotelling's T^2-test at the East Los Angeles site for the English-preferred children indicated that the experimental and control groups were comparable in their test performance in first and second languages on the cognitive measures and in their syntactical language development. For the Spanish speakers at this site the results of the multiple t-test (Hotelling's T^2) revealed no differences on first language cognitive measures but did reveal a significant difference on second language cognitive measures (Escuchen Este Cuento). Children at the East Los Angeles site were also comparable in their socioemotional development. A univariate t-test indicated that the children in the experimental and control groups were comparable in their syntactical development in first- and second-language development.

At the Milwaukee site a Hotelling's T^2-test revealed no significant differences between control and experimental groups for the cognitive measures of the child test battery for Spanish-speaking children nor for the socioemotional development forms.

The 2 x 2 MANOVA conducted for the Marco Abierto model indicated significant pretest site differences on second-language performance for English-preferring children. Significant experimental group differences were also present for the second-language performance of Spanish-preferring children. The proposed posttest analysis will continue to apply the 2 x 2 (site x experimental grouping) analysis design. To account for the respective preexisting site and group differences, however, the analysis will be expanded to include the factor score covariates from the pretest data base. Parental data as additional covariates will also be tested and used when appropriate. The final statistical analysis for the Marco Abierto model will consist of a series of four 2 x 2 multivariate analyses of covariance (MANCOVAS), one analysis for each language grouping of first- and second-language performance. Dependent measures for these tests will be the posttest results on the same combination measures that were used in the pretest analysis. Finally, univariate analysis of covariance will be conducted to test the effects of this model on socioemotional development.

B. Posttest of Teacher Data

The teacher data cannot be analyzed with the children and parent data for two reasons: (1) the absence of teachers in the stay-at-home comparison group and (2) attrition of staff at five out of the eight evaluation sites.

During the past months some sites encountered changes in classrooms, staff, and teachers' status. At the East Los Angeles site, two teacher's aides changed classrooms, as did a teacher and a teacher's aide at Corpus Christi. Seven teacher's aides left and new aides were hired and trained at five sites (Laredo, Rio Grande, East Los Angeles, Corpus Christi, and Milwaukee). At Corpus Christi, a teacher also had to be replaced. At Rio Grande, East Los Angeles, and Corpus Christi, at least one teacher's aide was elevated to the status of teacher. Only three sites, South Bronx, Lower East Side, and Corona, did not experience staff changes.

The objective of the teacher evaluation is to assess change in teachers' attitudes as as result of their participation in the curriculum models. The simplest analysis would be a correlated t-test (sometimes called a paired-sample t-test) using the pretest scores, but since there is more than one attitude score, a Hotelling's T^2-test is the appropriate test. However, since differences exist between teachers at different sites on background variables, i.e., number of years of teaching experience across sites, the analysis of the teacher data at posttest will be limited to comparisons among teachers within a site. This would reduce the sample size, making any statistical comparisons meaningless. The posttest analysis will consist of reporting descriptive statistics and cross-tabulations for each of the attitudinal variables.

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